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STUDIES OF AMERICAN PLANTS—III

BY

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CHICAGO, U. S. A.

JULY 9, 1930

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STUDIES OF AMERICAN PLANTS—III

PAUL C. STANDLEY

The following pages are devoted chiefly to descriptions of new species of tropical American plants, but there are listed, also, a few new combinations necessary for conformity with the International Rules.

Most of the new species described are from one of three principal sources. Many of them are Venezuelan Rubiaceae, which it was intended to publish in an enumeration of the plants of that family occurring in Venezuela, but since the publication of that account must be delayed for some months, it seems desirable to publish the new species at the present time.

Many of the plants here described are from Yucatan. Their diagnoses precede a flora of that region which, it is expected, will be issued in the near future.

Finally, the present paper contains descriptions of a large number of apparently new plants discovered in the current collections received for determination by Field Museum. Most of these novelties are Central American. A few were collected by the writer in Honduras in 1927-28, and several were found in the Salvadorean collections which Dr. Salvador Calderón, with his customary enthusiasm and diligence, has continued to forward.

The majority of the new Central American species were collected in British Honduras, a country in which unwonted botanical activity has developed during the past year. Several were detected in the northern part of that colony by Mr. C. L. Lundell, whose large collection of the past season is supplying the first adequate representation of the flora of any limited region of British Honduras. Mr. Lundell's collections have furnished the first records of the occurrence in Central America of numerous species known previously only from Yucatan or from more northern parts of Mexico.

The majority of the new British Honduras plants here described are from the astonishingly rich collection made lately by Mr. William A. Schipp. He seems to have a genius for discovering rare plants, or at least those which have escaped the attention of earlier explorers. Certain species occurring in his series are quite unexpected discoveries. Some represent substantial extensions of range, and

others illustrate species known heretofore only from the original collection. Particularly noteworthy is the discovery so far northward of the genus *Bredemeyera*, presumed previously to be confined to South America, and of a second Central American species of *Quina*, the first having been named from Panama only recently by the present writer.

Unless indicated otherwise, all the specimens cited on the succeeding pages are in the herbarium of Field Museum.

PALMACEAE

Acoelorhaphie Wrightii (Griseb. & Wendl.) Wendl.—Originally described from Cuba, this handsome palm probably occurs also in Florida and the Bahamas. It may now be added to the flora of Central America, on the basis of a collection made in British Honduras, along the Stann Creek Railway, in March, 1929, *W. A. Schipp 93*. At first I was inclined to believe that the British Honduras plant represented a distinct species, but the differences between it and the Cuban form do not seem to be of specific importance.

Bactris hondurensis, sp. nov.—Caudices erecti gracillimi c. 1 m. alti, ut videtur inermes, c. 1 cm. diam., in sicco brunnei, glabri, internodiis c. 3 cm. longis; folia in parte superiore caudicis sparsa; petiolus gracilis 28-33 cm. longus et ultra, supra sulcatus, aculeis paucis gracillimis atro-brunneis vel nigrescentibus 2-3.5 cm. longis armatus, basi valde ampliatus et vaginans; lamina bifida, simplex vel infra medium pinnatisecta, viridis, supra glabra vel sparse pilosula, subtus dense molliterque pilosa, segmentis 2 terminalibus latissimis, latere superiore 23-27 cm. longis, 7-17 cm. latis, inferioribus brevioribus angustioribusque, omnibus longissime et anguste caudato-attenuatis, ad margines saepe aculeolatis, aculeolis adpressis; spadices 4-5 cm. longe pedunculatae, 2-4 cm. longae; fructus ruber, 1.5 cm. diam., globosus, sessilis, apice mamillatus.—Honduras: Wet forest, Lancetilla Valley near Tela, Dept. Atlántida, alt. 150 m., March 13, 1928, *Paul C. Standley 56798* (Herb. Field Mus. No. 581,781, type). Also *No. 54212* from the same locality.

This palm grows only in the deep forest well up on the hillsides above Lancetilla. It is a slender and graceful plant, much less offensively armed than most species of the genus.

MUSACEAE

Heliconia reticulata (Griggs), comb. nov. *Bihai reticulata* Griggs, Bull. Torrey Club 31: 446. 1904.

Heliconia revoluta (Griggs), comb. nov. *Bihai revoluta* Griggs, Bull. Torrey Club 42: 322. f. 3. 1915.

ORCHIDACEAE

Cypripedium montanum Dougl.—In recent years, in spite of the extensive collections that have been made in Alaska, very few species new to the flora of the territory have been found. To the two species of *Cypripedium* hitherto known from the region may now be added this one of altogether different appearance. The data are as follows: Alaska: Glacier Bay, July 16, 1929, *William S. Cooper & Frances E. Andrews 212*. It is remarkable that so showy a plant should not have been found by some of the numerous collectors who have visited this locality in former years.

PIPERACEAE

Peperomia achoteana Trelease, sp. nov.—A moderately small, glabrous, stoloniferous, rupicolous herb with short leafy branches; stem 2-3 mm. thick, purplish, striate-angular; leaves alternate, elliptic-subobovate, obtuse or abruptly emarginulate-apiculate, acute-based, 2x2.5, 2.5x3.5, or 3.5x5.5 cm., 3-5-nerved, coriaceous, subrevolute, paler beneath; petiole 5-10 mm. long; spikes terminal and axillary, as yet 1x15 mm. and short-stalked; bracts round-peltate.—Honduras: On stone wall, El Achote above Siguatopeque, Dept. Comayagua, alt. 1,500 m., February, 1928, *Paul C. Standley 56160* (Herb. Field Mus. No. 581,095, type).¹

Peperomia siguatepequensis Trelease, sp. nov.—A small erect crisp-pubescent terrestrial herb; stem 2-3 mm. thick, naked below; leaves alternate, broadly ovate, acute, subacute at the base, 5x10-15x20 mm., reddish beneath, thick but drying translucent and 3-nerved by transmitted light; petiole very slender, 5 mm. long; spikes terminal, filiform, 30 mm. long, closely flowered; peduncle scarcely 5 mm. long; bracts round-peltate; berries round-ovoid, mucronate; stigma oblique.—Honduras: Moist shaded bank, Siguatopeque, Dept. Comayagua, alt. 1,100 m., February, 1928, *Paul C. Standley 56534* (Herb. Field Mus. No. 580,969, type).²

FAGACEAE

Quercus salvadorensis Trelease, sp. nov.—*Acutifoliae*. Twigs rather slender (2-3 mm.), little fluted, glabrous, reddish, with large pale lenticels; buds glossy brown, glabrous, ellipsoid, very obtuse,

¹ *Peperomia achoteana* Trelease, sp. nov.—Herba parvula glabra stolonifera, ramis brevibus foliatis, caule 2-3 mm. crasso striato-angulato; folia alterna, elliptico-subobovata, obtusa vel abrupte emarginulato-apiculata, basi acuta, 3-5-nervia, coriacea, subrevoluta, subtus pallidiora, petiolata; spicae terminales et axillares breviter pedunculatae, bracteis orbiculari-peltatis.

² *Peperomia siguatepequensis* Trelease, sp. nov.—Herba parva erecta terrestris crispo-pubescent; folia alterna late ovata acuta, basi subacuta trinervia, petiolo gracillimo; spicae terminales filiformes densiflorae, bracteis orbiculari-peltatis; baccae rotundato-ovoideae mucronatae, stigmate obliquo.

about 2x4 mm.; leaves persisting until after flowering time, hard-papery, lanceolate, acute at both ends, serrate above the middle with long-aristate deltoid teeth between which the margin is straight, moderate (about 5x14 cm.), glossy, glabrous, dark green above, the veins about 10x2, not looped; petiole glabrous, 1x25-40 mm.; catkins not seen; fruit apparently biennial, the cup conical-saucer-shaped, nearly 25 mm. in diameter, with rather thin, closely appressed, glabrate, more or less pointed scales; acorn round-ovoid, blunt, about 20 mm. long, dark brown and glossy, covered at the base only.—Salvador: Summit of Cerro del Guayabal, alt. 1,440 m., January 3-4, 1924, *Salvador Calderón 1981* (U. S. Nat. Herb., type).¹

"Roble blanco."

Quercus guayabalana Trelease, sp. nov.—*Linguaeifoliae*. Twigs moderately stout (3-4 mm.), little fluted, rather persistently and densely brown-tomentose, purplish gray when denuded and with paler lenticels; buds ovoid, brown-hairy but becoming glabrate and glossy brown, 2x4 mm.; leaves evergreen, elliptic- or lance-oblong, acute, cordulate, entire, slightly revolute, moderately large (4-5.5x12-17 cm.), coriaceous, tomentose becoming glabrate and glossy except in sheltered places, the veins about 13x2 with some short intermediates, looping and somewhat forked; petiole grayish-tomentose, thick, scarcely 5 mm. long; staminate catkins 10 cm. long, floccose, rather loosely flowered, the glabrous ellipsoid anthers somewhat exerted; fruit biennial, paired at the end of a peduncle scarcely 1 cm. long at the end of the first year; scales of the young cup rounded, gray-tomentulose except at the margin.—Salvador: Summit of Cerro del Guayabal, alt. 1,440 m., January 3-4, 1924, *Salvador Calderón 1982* (U. S. Nat. Herb., type).²

"Roble negro."

MORACEAE

Coussapoa Purpusii, sp. nov.—Arbor semi-epiphytica, ramulis crassis ferrugineo-brunneis glabris, lenticellis paucis magnis pallidis conspersis; stipulae lanceolato-oblongae 12-18 mm. longae longiacuminatae, dorso et praesertim versus apicem minute sericeae, brunneae, caducae; folia petiolata, petiolo 1.5-3 cm. longo gracili glabro supra breviter sulcato; lamina coriacea, oblonga, elliptico-oblonga vel ovato-oblonga, 9-14 cm. longa, 4-6 cm. lata, acuta vel

¹ *Quercus salvadorensis* Trelease, sp. nov.—Ramuli subgraciles glabri pallide lenticellati; folia subpersistencia, crasse papyracea, lanceolata, utrinque acuta, supra medium serrata, serraturis deltoideis longiaristatis, lucida, glabra, petiolata; nux ut videtur biennis; cupula conico-patelliformis, squamis arcte adpressis subtenuibus glabratibus plus minusve acutatis, nuce rotundato-ovoidea, fusco-brunnea, lucida.

² *Quercus guayabalana* Trelease, sp. nov.—Ramuli validiusculi, subpersistentes brunneo-tomentosi, serius purpureo-grisei, pallide lenticellati; folia sempervirentia, elliptico- vel lanceolato-oblonga, acuta, cordulata, integra, subrevoluta, coriacea, tomentosa, serius glabrata, petiolo griseo-tomentoso crasso; spicae masculae floccosae laxiflorae, antheris subexsertis; nuxes biennae ad apicem pedunculi brevis geminatae, cupulae juvenilis squamis rotundatis, margine excepto griseo-tomentulosi.

acuminata, basi rotundata, glabra, supra viridis, nervis vix elevatis, subtus pallida, costa gracili elevata, basi trinervia; inflorescentiae numerosae axillares cymosae, 2-3 cm. longe pedunculatae, dichotomae, ramulis gracilibus glabris; capitula globosa vel depresso-globosa 4-8 mm. lata, densissime multiflora, pedunculis 3-10 mm. longis apicem versus paullo dilatatis.—Mexico: Zacuapam, Veracruz, April, 1928, *C. A. Purpus 11162* (Herb. Field Mus. No. 588,337, type); March, 1908, *Purpus 5996*.

This is the first true *Coussapoa* to be reported from Mexico. A tree described by the writer under the name of *C. Rekoi* is stated by Mildbraed (Notizbl. Bot. Gart. Berlin 10: 413. 1928) to be synonymous with *Poulsenia aculeata* Eggers, of Ecuador.

Ficus Schippii, sp. nov.—Arbor epiphyticus 15-metralis, trunco 10-12.5 cm. diam., ramulis crassiusculis teretibus brunnescentibus et plus minusve griseis glabris, internodiis brevibus; stipulae 15-18 mm. longae, anguste lanceolatae, longe attenuatae, crassae, brunnescentes, glabrae, caducae; folia longiuscule petiolata, petiolo gracili 1.5-5.5 cm. longo glabro; lamina subcoriacea, oblonga vel ovali-oblonga, 8-14.5 cm. longa, 4.5-5.8 cm. lata, apice obtusa vel interdum rotundata et abrupte cuspidato-acuminata, acumine angusto c. 1 cm. longo obtuso, basi obtusa vel rotundata, integra, utrinque glabra, costa nervisque supra prominulis, costa subtus elevata, gracili, nervis lateralibus utroque latere c. 13, angulo lato divergentibus, fere rectis, prominentibus, prope marginem conjunctis; receptacula geminata sessilia subglobosa vix 5 mm. diam. glabra, ostiolo plano, involucro adpresso glabro, lobis 2 subaequalibus c. 1 mm. longis apice rotundatis.—British Honduras: Middlesex, alt. 60 m., September 1, 1929, *W. A. Schipp 334* (Herb. Field Mus. No. 602,917, type).

Since the writer published, in 1917, an account of the Mexican and Central American species of *Ficus* (Contr. U. S. Nat. Herb. 20: 1-35), very few new species of the genus have been detected in Central America. This is remarkable, in view of the fact that during the past twelve years a great deal of collecting has been done in the region. Apparently, most of the species of Central America have been collected.

The present plant does not agree, however, with any of the species hitherto recorded for Central America. Probably it is related to *F. Colubrinae* Standl., but that differs in having smaller leaves, more or less pubescent, and with only 2-4 pairs of lateral nerves.

LORANTHACEAE

Struthanthus cassythoides Millsp., sp. nov.—Frutex epiphyticus omnino glaber, ramis longis ut videtur pendentibus, saepe volubilibus, griseis, teretibus, internodiis brevibus vel elongatis;

folia subsessilia (petioli vix 2 mm. longi), obovata vel oblongo-obovata, 2.5-3.5 cm. longa, 0.8-1.5 cm. lata, apice late rotundata, basi cuneata, crassa, basi 4-5-nervia, subtus minute granulosa; cymae solitariae vel ad nodos fasciculatae, valide 2-5 mm. longe pedunculatae, 3-10-florae, floribus solitariis vel congestis sessilibus; calyx ovario adjecto 1 mm. longus, limbo truncato; petala 4 linearia 3 mm. longa; filamenta valida petalis aequilonga; stylus crassus glaber petalis aequilongus.—Yucatan: Progreso, G. F. Gaumer 1174 (Herb. Field Mus. No. 438,251, type), 2220, 2458. Without definite locality, Gaumer 23997.

This was indicated as a new species of *Loranthus* by Dr. Millspaugh, but no description of it has ever been published. The Yucatan plant is perhaps related to *S. diversifolius* (Benth.) Standl., a little-known species of central Mexico.

ARISTOLOCHIACEAE

Aristolochia Schippii, sp. nov.—Frutex alte scandens c. 10 m. longus, ramulis subteretibus, vetustioribus cortice crassa suberosa profunde sulcata et corrugata obtectis, c. 1.5 cm. crassis, novellis glabris; folia longipetiolata, petiolo 10-15 cm. longo gracili glabro; lamina subcoriacea, late deltoideo-ovata, c. 24 cm. longa et 18 cm. lata, acuta vel breviter acuminata, basi profunde cordata, sinu subquadrangulati c. 5 cm. longo et 3.5 cm. lato, lobis basalibus late rotundatis, glabra, 5-nervia, nervis utrinque prominentibus, nervulis subtus prominulis et arcte reticulatis; flores ut videtur e ramis defoliatis nascentes, fasciculati, pedicellis gracillimis 2-2.5 cm. longis; calyx glaber, flavescens, venis rubro-brunneis reticulatis, 5 cm. longus, paullo curvatus, parte basali inflata 1 cm. longa et 7 mm. lata, tubo 1.5 cm. longo, labio fere 3.5 cm. longo longe acuminato basi explanato 14 mm. lato; capsula 11 cm. longa, 1 cm. crassa, basi abrupte contracta et stipitata, apice quoque contracta et acuminata, 6-costata, glabra.—British Honduras: In jungle, Big Creek, alt. 15 m., March 11, 1929, W. A. Schipp 75 (Herb. Field Mus. No. 588,326, type).

POLYGONACEAE

Coccoloba cardiophylla, sp. nov.—Omnino glabra, ramulis teretibus obscure striatis griseis, internodiis brevibus vel elongatis; ocreae caducae 8-12 mm. longae crassae brunneae; petioli graciles 1-2 cm. longi; lamina ovato-rotundata vel rotundato-ovata, 5-7 cm. longa, 3.5-5.5 cm. lata, apice obtusa vel acutiuscula, basi rotundata et emarginata vel profunde cordata, sinu usque ad 6 mm. longo, lobis basalibus rotundatis, subcoriacea, opaca, concolor, basi 5-nervia, costa utrinque nervos 3-4 graciles subtus prominentes emittente, nervulis gracillimis artissime reticulatis sed inconspicuis; racemi floriferi 1-2 cm. longi, sessiles vel subsessiles, fructiferi c. 3 cm. longi, laxi et remotiflori, pedicellis validis divaricatis 2-3 mm. longis ocreolis minutis multo longioribus; sepala 1 mm. longa ovalia;

stamina sepalis aequilonga.—Yucatan: Without definite locality, in 1917-21, *G. F. Gaumer 24013* (Herb. Field Mus. No. 552,016, type). Kancabtsnot, *Gaumer 23865, 23905*.

Coccoloba cardiophylla is well differentiated from other Mexican species by the small broad leaves with cordate base, and by the long pedicels.

Coccoloba changuinolana, sp. nov.—Arbor usque ad 9 m. alta, trunco 10-13 cm. diam., ramulis gracilibus teretibus rimosis glabris, internodiis brevibus; ocreae deciduae; folia breviter petiolata, petiolo 1-2.2 cm. longo subtereti supra anguste sulcato glabro; lamina crasse membranacea, ovalis vel ovali-elliptica, 12-21 cm. longa, 5.5-10.5 cm. lata, apice acuta vel plerumque rotundata et abrupte breviterque acuminata, acumine vix 1 cm. longo triangulari, basi obtusa vel subrotundata et saepius plus minusve obliqua, glabra, costa nervisque supra prominulis, subtus elevatis, costa gracili, nervis lateralibus utroque latere c. 11, gracilibus, angulo lato adscendentibus, subarcuatis, juxta marginem conjunctis, nervulis prominulis reticulatis; racemi terminales foliis saepe longiores, solitarii, simplices, brevissime pedunculati, 4-19 cm. longi, dense vel remote multiflori, rhachi minute puberula, ocreolis 1.5-2 mm. longis; pedicelli in anthesi ocreolis subaequales, glabri, perianthio glabro 1.5-2 mm. longo; stamina exserta; fructus late ovoideus 7 mm. longus obtusus, perianthii tubo accrescente inclusus.—Panama: Farm Six, Changuinola Valley, March 3, 1924, *V. C. Dunlap 499* (Herb. Field Mus. No. 580,004, type). Daytonia Farm, region of Almirante, in 1928, *Cooper 421*.—Costa Rica: La Palma, Changuinola Valley, *Dunlap 467*.

Related to *C. Schiedeana* Lindau, of Mexico and northern Central America, in which the leaves are coriaceous.

AMARANTHACEAE

Alternanthera martinicensis (Moq.), comb. nov. *Telanthera martinicensis* Moq. in DC. Prodr. 13²: 366. 1849.

Alternanthera obovata (Mart. & Gal.), comb. nov. *Bucholzia obovata* Mart. & Gal. Bull. Acad. Brux. 10¹: 348. 1843. *Telanthera obovata* Moq. in DC. Prodr. 13²: 370. 1849.

Alternanthera megaphylla (Standl.), comb. nov. *Achyranthes megaphylla* Standl. N. Amer. Fl. 21: 141. 1917.

Alternanthera panamensis (Standl.), comb. nov. *Achyranthes panamensis* Standl. Contr. U. S. Nat. Herb. 18: 89. 1916.

Alternanthera stenophylla (Standl.), comb. nov. *Achyranthes stenophylla* Standl. Contr. U. S. Nat. Herb. 18: 90. 1916.

Alternanthera pycnantha (Benth.), comb. nov. *Brandesia pycnantha* Benth. Bot. Voy. Sulph. 157. 1884. *Telanthera pycnantha* Moq. in DC. Prodr. 13²: 376. 1849.

Alternanthera cordobensis (Standl.), comb. nov. *Achyranthes cordobensis* Standl. Contr. U. S. Nat. Herb. 18: 90. 1916.

Aerva scandens (Roxb.) Wall., f. **sanguinea**, f. nov.—Folia sanguinea vel purpurea; ceteris formae typicae omnino similis.—Cuba: Jardín Botánico, Havana, cultivated, March 4, 1929, L. H. Bailey 12116 (Herb. Field Mus. No. 600,264, type).

Dr. Bailey reports that this red-leaved form is grown in Havana as a border plant, in the same manner as some of the well-known fancy-leaved forms of the genus *Alternanthera*.

CHENOPODIACEAE

Suaeda Palmeri (Standl.), comb. nov. *Dondia Palmeri* Standl. N. Amer. Fl. 21: 91. 1916.

Suaeda tampicensis (Standl.), comb. nov. *Dondia tampicensis* Standl. N. Amer. Fl. 21: 91. 1916.

Suaeda taxifolia (Standl.), comb. nov. *Dondia taxifolia* Standl. N. Amer. Fl. 21: 91. 1916.

Suaeda brachyphylla, nom. nov. *Dondia brevifolia* Standl. N. Amer. Fl. 21: 92. 1916, not *S. brevifolia* Phil., 1895.

Atriplex nitens Schkuhr.—This introduced species is not listed from Utah, but the following collection may be reported: Damp saline soil, Beck's Hot Springs, Salt Lake County, September 12, 1924, S. Flowers No. 643. The specimen was communicated by Professor A. O. Garrett.

NYCTAGINACEAE

Allionia cristata (Standl.), comb. nov. *Wedelia cristata* Standl. Contr. U. S. Nat. Herb. 12: 331. 1909.

Allionia glabra (Choisy), comb. nov. *Allionia incarnata* var. *glabra* Choisy in DC. Prodr. 13: 435. 1849. *Wedeliella glabra* Cockrell, Torreyia 9: 167. 1909.

Allionia glabra Kuntze (Rev. Gen. 2: 533. 1891) is a member of the genus *Oxybaphus*, therefore the specific name *glabra* is valid for a species of the genus *Allionia*, as that generic name is employed here.

Oxybaphus corymbosus (Cav.), comb. nov. *Mirabilis corymbosa* Cav. Icon. 4: 55. 1797. *Allionia corymbosa* Kuntze, Rev. Gen. 2: 533. 1891.

Oxybaphus microchlamydeus (Standl.), comb. nov. *Allionia microchlamydea* Standl. Contr. U. S. Nat. Herb. 13: 405. 1911.

Oxybaphus gausapoides (Standl.), comb. nov. *Allionia gausapoides* Standl. Contr. U. S. Nat. Herb. 13: 406. 1911.

Oxybaphus decipiens (Standl.), comb. nov. *Allionia decipiens* Standl. N. Amer. Fl. 21: 233. 1918.

Oxybaphus lanceolatus (Rydb.), comb. nov. *Allionia lanceolata* Rydb. Bull. Torrey Club 29: 691. 1902.

Oxybaphus pumilus (Standl.), comb. nov. *Allionia pumila* Standl. Contr. U. S. Nat. Herb. 12: 345. 1909.

Oxybaphus rotundifolius (Greene), comb. nov. *Allionia rotundifolia* Greene, Pl. Baker. 3: 33. 1901.

Oxybaphus Grayanus (Standl.), comb. nov. *Allionia Grayana* Standl. N. Amer. Fl. 21: 227. 1918.

Oxybaphus longipes (Standl.), comb. nov. *Allionia longipes* Standl. N. Amer. Fl. 21: 229. 1918.

CARYOPHYLLACEAE

Drymaria excisa, sp. nov.—Herba gracilis, caulibus usque ad 50 cm. longis, internodiis elongatis, inferioribus glabris, superioribus viscido-puberulis; folia longe petiolata, petiolo plerumque 1-2 cm. longo fere filiformi glabro, foliis superioribus interdum fere sessilibus; lamina membranacea, latissime rotundato-obdeltoidea vel interdum fere rotundata, 1-2.8 cm. longa, 1-3.4 cm. lata, apice truncata vel brevissime retusa et apiculata, rarius rotundata, basin versus paullo angustata et late cuneata, trinervia, glabra, nervis late arcuatis, apice laminae conjunctis; stipulae lineares vel subulatae 1.5-2.5 mm. longae erectae; flores pauci subumbellati, pedicellis gracilibus elongatis puberulis; sepala lanceolato-oblonga 5-6 mm. longa viridescencia acuta minute puberula; petala alba sepalis paullo longiora.—Mexico: Real Alto, trail to El Tajo de Santiago, Sierra Madre Occidental, Jalisco, on densely wooded, damp, north slope, alt. 750 m., February 23, 1927, *Ynes Mexia 1748* (Herb. Field Mus. No. 579,891, type).

The species may be recognized easily by the form of its leaves, which are very different from those of any other species.

MENISPERMACEAE

Hyperbaena nectandrifolia, sp. nov. — Ramuli brunneo-olivacei teretes striati glabri internodiis brevibus; petioli 1.3-4 cm. longi crassiusculi, superne paullo incrassati, subteretes, glabri; lamina crasse coriacea, integra, oblonga vel anguste oblonga, 11-24 cm. longa, 4-8.5 cm. lata, acuta vel acuminata, basi acuta vel acutiuscula et saepe inaequalis, supra viridis, lucida, costa ut nervi et nervuli prominente, nervulis arcte reticulatis, subtus vix pallidior, sublucida, costa crassiuscula elevata, nervis lateralibus utroque

latere 6-8, angulo acuto adscendentibus, valde inaequalibus, elevatis, subarcuatis, remote a margine irregulariter conjunctis, nervulis vix prominulis, lamina e basi saepe trinervia; paniculae laxae petiolis paullo longiores, fasciculatae, ramulis gracilibus minute ferrugineo-pilosulis, floribus breviter pedicellatis; bracteis minutis pilosulis; flores in alabastro vix 1 mm. lati, sepalis subrotundatis extus minute pilosulis.—Yucatan: Izamal, in 1888, *G. F. Gaumer* (Herb. Field Mus. No. 181,606, type).

The plant is rather similar to *H. phanerophlebia* Standl., but in that species, of Salvador, the flowers are glabrous or nearly so, and the leaves cuneately acute at the base and with distinct venation.

Hyperbaena isophylla, sp. nov.—Ramuli graciles teretes striati glabri, olivacei vel grisei, internodiis brevibus vel elongatis; petioli graciles 1.5-2.2 cm. longi, subteretes, prope apicem paullo tumidi; lamina coriacea, lucida, integra, elliptico-oblonga vel lanceolato-oblonga, 10-13 cm. longa, 4-5 cm. lata, acuminata, basi acuta et interdum plus minusve inaequalis, costa ut nervi et nervuli utrinque prominente, nervulis arcte reticulatis, fere concolor, pinnatinervia, costa gracili, nervis lateralibus utroque latere c. 6, inaequalibus, angulo acuto adscendentibus, arcuatis, prope marginem irregulariter conjunctis; paniculae masculae fasciculatae, axillares et e ramulis defoliatis nascentes, laxae multiflorae, petiolis multo longiores, ramis gracillimis dense puberulis, floribus breviter pedicellatis, bracteis et bracteolis minutis dense pilosulis; flores in alabastro vix 1 mm. diam., puberuli.—Costa Rica: Santo Domingo de Golfo Dulce, in 1896, *A. Tonduz 7232* (Herb. Field Mus. No. 195,419, type).

The leaves are somewhat like those of *H. phanerophlebia* Standl., but in that species the blades are commonly more or less 3-nerved or triplinerved, and the flowers are glabrous or nearly so.

MYRISTICACEAE

Dialyanthera multiflora, sp. nov.—Arbor 9-metralis, trunco 10 cm. diam., ramulis gracilibus teretibus, vetustioribus ochraceis vel brunnescentibus, novellis glabris vel sparse et minutissime puberulis, internodiis plerumque 5-8 mm. longis; folia alterna petiolata, petiolo gracili 5-8 mm. longo sparse et minute puberulo vel glabrato supra sulcato; lamina coriacea, lanceolato-oblonga, 5-8 cm. longa, 1.5-2.5 cm. lata, acuta vel sensim acuminata, apice ipso obtuso, basi acuta, glabra, supra viridis, minute pallidopuncticulata, nervis subimpressis, subtus pallida, costa gracili elevata, nervis lateralibus utroque latere c. 13, angulo lato adscendentibus, prominentibus, subarcuatis, prope marginem conjunctis; inflorescentiae laterales, floribus umbellatis, umbellis plerumque 5-7-floris, racemosis vel paniculatis, paniculis anguste pyramidalibus pedunculatis 3-6 cm. longis, pedunculis infimis plerumque 6-10 mm. longis, sparse puberulo-tomentellis, superioribus multo brevioribus,

divaricatis; flores pedicellati, pedicellis gracilibus 2-4 mm. longis dense tomentellis; perianthium 1.5-2 mm. longum dense ochraceo-tomentosum, in alabastro obovoideum et apice obtusum.—British Honduras: In jungle, Stann Creek Railway, alt. 30 m., July 16, 1929, *W. A. Schipp* 279 (Herb. Field Mus. No. 598,216, type).

The small leaves recall those of *D. acuminata* Standl., of Panama, but in the latter the leaves have long and narrow acuminations and longer petioles, and the inflorescences are few-flowered and but little longer than the petioles.

CRUCIFERAE

Sisymbrium Storkii, sp. nov.—Herba ramosa, ramis crassiusculis teretibus satis dense pilis longis mollibus albidis pilosis; folia caulina sessilia, obovato-oblonga vel lanceolato-oblonga, 4-8 cm. longa, 1-2.5 cm. lata, herbacea, acuminata, basi versus paullo angustata, basi ipsa breviter cordata et amplexicauli, auriculis rotundatis 2-4 mm. longis, subintegra vel remote serrato-denticulata, utrinque albido-pilosa; racemi 20-30 cm. longi et ultra, remotiflori, rhachi glabra valida, pedicellis late adscendentibus solitariis 3-6 mm. longis glabris; sepala purpurascentia oblonga obtusa glabra 2 mm. longa; stamina sepalis aequilonga, filamentis crassis, antheris oblongis; siliqua linearis subteres 2-3 cm. longa glabra, valvis tenuiter trinerviis, rostro crasso cylindraceo 1.5 mm. longo.—Costa Rica: El Roble, alt. 2,850 m., common in forest, May 16, 1928, *H. E. Stork* 2005 (Herb. Field Mus. No. 598,852, type).

Sisymbrium costaricense Standl., the only other representative of the genus known from Costa Rica, has glabrous stems and leaves and slightly larger flowers.

LEGUMINOSAE

Schrankia Nuttallii (DC.), comb. nov. *Leptoglottis Nuttallii* DC. Mém. Légum. 451. 1825. *S. uncinata* T. & G. Fl. N. Amer. 1: 400. 1840.

Schrankia hystricina (Small), comb. nov. *Leptoglottis hystricina* Small ex Britt. & Rose, N. Amer. Fl. 23: 139. 1928.

Schrankia paucijuga (Britt. & Rose), comb. nov. *Leptoglottis paucijuga* Britt. & Rose, N. Amer. Fl. 23: 139. 1928.

Schrankia occidentalis (Woot. & Standl.), comb. nov. *Morongia occidentalis* Woot. & Standl., Contr. U. S. Nat. Herb. 16: 135. 1913.

Schrankia Halliana (Britt. & Rose), comb. nov. *Leptoglottis Halliana* Britt. & Rose, N. Amer. Fl. 23: 141. 1928.

Schrankia confusa (Britt. & Rose), comb. nov. *Leptoglottis confusa* Britt. & Rose, N. Amer. Fl. 23: 141. 1928.

Schrankia microphylla (Dryand.), comb. nov. *Mimosa microphylla* Dryand. ex J. E. Sm., Insects Georgia 2: 123. 1797. *S. uncinata* Willd. Sp. Pl. 4: 1043. 1806.

Schrankia Palmeri (Britt. & Rose), comb. nov. *Leptoglottis Palmeri* Britt. & Rose, N. Amer. Fl. 23: 143. 1928.

Hymenaea Courbaril L.—If one were to read the description of *Inga megacarpa* Jones (Contr. West. Bot. 15: 140. 1929), and attempt to place the plant by description alone, one would probably encounter some difficulty. Examination of the type collection, however, shows at once that the "*Inga*" is really *Hymenaea Courbaril*, one of the most common trees of the Pacific coast of Mexico. The leaflets are, of course, a single pair, as usual, not "about 5 pairs," as described by the author.

Parosela Gaumeri, sp. nov.—Frutex glaber vel fere glaber, ramulis gracillimis ochraceis glandulis numerosis elevatis nigrescentibus conspersis; rhachis cum petiolo 7-14 mm. longa, glandulosa, interdum prope basin minute puberula, non alata; stipulae anguste subulatae 1-1.5 mm. longae; stipellae minutae glanduliformes; foliola c. 7, oblonga vel cuneato-oblonga, 4-7 mm. longa, 2-4 mm. lata, apice late rotundata, basi obtusa, supra viridia, subtus paullo pallidiora, dense glandulis magnis conspersa, petiolulis 0.7 mm. longis; spicae solitariae vel paniculatae, terminales, sessiles vel breviter pedunculatae, 1-1.5 cm. longae, subdensae, pauci- vel multiflorae, floribus sessilibus, rhachi saepe flexuosa, dense glandulis magnis elevatis fuscis onusta; bractae caducae ovatae subulato-cuspidato-acuminatae, glabrae, glandulosae, calyce multo breviores; calyx 3-3.5 mm. longus, extus glaber, 10-costatus, glandulis magnis elongatis inter costas onustus, fauce dense barbata, lobis subulato-acuminatis apice saepe incurvis inaequalibus, lobo maximo tubum fere aequante, ceteris multo brevioribus; petala in sicco ochroleuca, vexillo 5 mm. longo, alis carinaeque brevioribus.—Yucatan: Chichankanab, G. F. Gaumer 1457 (Herb. Field Mus. No. 57,386, type). San Anselmo, Gaumer 1727. Pocoboch, Gaumer 2408.

The plant is a well-marked species, perhaps referable to Rydberg's group *Thyrsoflorae*, although certainly very different from any of the species placed in it.

Chaetocalyx vestita, sp. nov.—Herba gracilis volubilis ramosa, caulibus dense pilis gracilibus patentibus pilosis; stipulae lanceolatae 3-4 mm. longae attenuatae virides pubescentes; folia pinnata 5-foliolata petiolata, rhache dense breviterque pilosa, foliolis breviter petiolulatis ovalibus vel oblongo-ovalibus 1.2-3 cm. longis, 0.7-1.3 cm. latis, utrinque rotundatis, apice apiculatis, tenuibus, supra viridibus et curvo-puberulis, subtus pallidioribus, dense pilis brevibus saepe curvis plerumque fulvis pilosis; flores in axillis fasciculati, pedicellis 8-12 mm. longis gracilibus dense pilosis; calyx 6-7 mm. longus dense pilosus, pilis paucis crassioribus lutescentibus interdum admixtis, lobis triangularibus vel lanceolato-triangularibus acutis vel acuminatis plerumque tubo brevioribus; vexillum suborbiculare

12-15 mm. longum apice profunde emarginatum, extus dense pilis brevibus albidis adpressis pubescens; alae vexillo aequilongae glabrae; legumen lineare 7.5-11 cm. longum, 1.5 mm. latum, dense pubescens, c. 10-articulatum, apice versus stylum gracilem longi-attenuatum, segmentis c. 1 cm. longis conspicue longitrorsum striatis.—Yucatan: Xnocac, December, 1916, *G. F. Gaumer 23509* (Herb. Field Mus. No. 460,300, type). Buena Vista Xbac, *Gaumer 1077*. San Anselmo, *Gaumer 2165*. Without definite locality, *Gaumer 24117*.

No other representative of the genus *Chaetocalyx* (as now restricted) is known from Mexico, and only one, *C. latisiliqua* (Desv.) Benth., from Central America. The Yucatan plant is related to *C. hebecarpa* Benth., a South American species.

Hedysarum americanum (Michx.) Britton, f. **albiflorum**, f. nov.—Petala alba.—Alaska: Davidson Glacier, July 4, 1929, *William S. Cooper & Frances E. Andrews 95* (Herb. Field Mus. No. 598,264, type).

In the usual form of the species the corolla is purple.

Dalbergia glabra (Mill.), comb. nov. *Robinia glabra* Mill. Gard. Dict. ed. 8. *Robinia* No. 5. 1768. *D. campechiana* Benth. Journ. Linn. Soc. 4: Suppl. 37. 1860.

This species has been collected recently in British Honduras: Honey Camp, August, 1929, *C. L. Lundell 305*.

Machaerium Merrillii, sp. nov.—Frutex scandens c. 15-metralis, ramulis validis teretibus cinnamomeis, novellis pilis longis stramineis divaricatis basi valde dilatatis hispidis, quoque albidopilosis atque plus minusve albido-tomentosis, ramis vetustioribus basibus pilorum persistentibus asperis; stipulae persistentes spinosae et induratae, crassae, acutae, plerumque 5-7 mm. longae, puberulae et tomentellae; folia 7-11 cm. longa, breviter petiolata, petiolo ut rhachis gracili, dense puberulo; foliola c. 45, brevissime petiolulata, oblonga, 5-9 mm. longa, c. 3 mm. lata, retusa, basi oblique rotundata, supra viridia, enervia, glabra, subtus pallidiora, ad costam elevatam minute puberula vel glabrata, aliter glabra, nervis lateralibus obsoletis; flores paniculati, paniculis angustis laxae multifloris 8-18 cm. longis inflorescentiam amplam terminalem efformantibus, ramis hispidis et tomentellis, pedicellis 1-2 mm. longis validis, bracteolis rotundatis concavis c. 3 mm. longis puberulis striatis; calyx anguste campanulatus 5 mm. longus breviter lobatus, lobis late rotundatis, sericeus; vexillum 8 mm. longum profunde emarginatum, extus dense albido-sericeum, alis et carina glabris; legumen immaturum 3.5 cm. longum, ala tenui apicem versus 1 cm. lata, dense pilosa, parte seminifera dense stramineo-hispida.—British Honduras: In jungle, Stann Creek Railway, alt. 15 m., April 2, 1929, *W. A. Schipp 113* (Herb. Field Mus. No. 593,114, type).

A woody vine, climbing high over tall forest trees, the trunk about 10 cm. in diameter. Flowers pale pink.

In most characters this plant resembles *M. setulosum* Pittier, of southern Mexico. In the latter, however, the leaflets are several times as large, and the pubescence is different.

At the collector's request, this species is named for Dr. Elmer D. Merrill.

Cicer arietinum L.—This is a fairly well-known plant, supplying, as it does, one of the chief foods of the Iberian Peninsula, the garbanzo or chick-pea. In Mexico, likewise, it is a favorite food, procurable in any village market, and planted in wide fields, like beans or maize. It was inevitable that it should attract the attention of one unfamiliar with the region, yet that is perhaps not sufficient reason for describing this Old World plant as a new species, and in a genus other than that to which it really belongs. To the synonymy of *Cicer arietinum* must be added the following quite superfluous name: *Ononis crotalarioides* Jones, Contr. West. Bot. 15: 138. 1929.

RUTACEAE

Zanthoxylum trichilloides, sp. nov.—Ramuli inermes, validi et crassissimi, grisei, ad apices dense foliati, pilulis griseis vel lutescentibus minute stellato-tomentosi; folia imparipinnata petiolata, petiolo 3-5 cm. longo, rhachi 7-11 cm. longa gracili stellatim griseo-tomentulosa; foliola 9-13, oblonga vel lanceolato-oblonga, 3.5-8 cm. longa, 1-2 cm. lata, acuminata vel longiacuminata, basi obliqua, uno latere rotundata, alio acuta, subcoriacea, in sicco nigrescentia, opaca, glandulis numerosis pellucido-punctata, supra lucida, sparse minuteque stellato-pubescentia, subtus paulo pallidiora, primo subdense stellato-pubescentia, cito glabrata, margine fere integro subrevoluta; paniculae terminales 7-10 cm. longae multi-ramosae sessiles foliis breviores, ramis stellato-pubescentibus; pedicelli florum femineorum fere 2 mm. longi validi; calyx 1 mm. latus persistens, sepalis 5 ovatis; petala 5 lineari-oblonga 2 mm. longa obtusa extus stellato-pubescentia; ovarium 1 dense tomentosum sessile, stigmatibus sessilibus; folliculus 1 oblique obovoideus 3 mm. longus stellato-pubescentis, basi abrupte contractus, glandulis numerosissimis parvis elevatis conspersus.—Yucatan: Without definite locality, in 1917-21, G. F. Gaumer 24014 (Herb. Field Mus. No. 552,017, type), 24339, 24005.

The nearest relative of this Yucatan species is *Z. microcarpum* Griseb., which has conspicuously crenate leaflets, obtuse to merely acute at the apex, and few large glands on the follicles.

MALPIGHIACEAE

Byrsonima bucidaefolia, sp. nov.—Ramuli grisei apice dense foliati, novellis dense sericeis mox glabris; petioli usque ad 5 mm.

longi pilis rufis adpresso-pilosi; lamina obovata vel cuneato-obovata, 5-8 cm. longa, 2.5-3.5 cm. lata, apice late rotundata, saepe emarginata, basi cuneata vel late cuneata, tenuis, supra viridis, glabra vel pilis paucis laxis deciduis induta, subtus pallidior, laxe pilis albidis tomentosa, marginibus saepe revolutis; racemi pedunculati foliis subaequales, multiflori, rhachi c. 5 cm. longa pilis lucidis ferrugineo-tomentosa, pedicellis 4-8 mm. longis tomentosus; bracteae ovatae obtusae 3 mm. longae extus tenuiter tomentosae, intus glabrae, bracteolis rotundato-ovatis usque ad 2 mm. longis, prope basin pedicelli insertis; sepala 3-3.5 mm. longa ovata obtusa superne tenuiter tomentosa, glandulis 2 magnis basalibus sepalis duplo brevioribus; petala longe unguiculata in sicco rubescentia, glabra, lamina reniformi 5 mm. lata grosse dentata; antherae connectivum vix loculis aequilongum; fructus globosus 8 mm. diam. glaber, stylis persistentibus 3-4 mm. longis.—Yucatan: Kancabtsionot, May, 1917, *G. F. Gaumer 23869* (Herb. Field Mus. No. 466,338, type). Without definite locality, *Gaumer 24012, 24391, 23966*.—British Honduras: Honey Camp, September, 1929, *C. L. Lundell 353*.

A good many species of *Byrsonima* have been described or reported from Mexico and Central America, but all or most of them seem to me to be mere forms of the variable *B. crassifolia* (L.) DC. This Yucatan plant, however, is so strikingly different, and so uniform in its foliage characters, that it seems safe to regard it as a distinct species.

POLYGALACEAE

Bredemeyera lucida (Benth.) Benn.—The genus *Bredemeyera* has not been known previously from North America, although well represented in South America. The following collection seems to be referable to *B. lucida*: British Honduras: Stann Creek Railway, alt. 15 m., in jungle, April 4, 1929, *W. A. Schipp 169*. The plant is reported to be a subscandent shrub 2.5 m. high, with stems 5 cm. in diameter. The collector states that it is rare in the region.

DICHAPETALACEAE

Dichapetalum Donnell-Smithii Engler, Bot. Jahrb. Engler 23: 144. 1896.

This species has been known from Guatemala and Salvador, and it may now be reported for a third country of Central America: British Honduras: Middlesex, alt. 60 m., on river bank, a vine 9 m. long, the stem 5 cm. in diameter, the flowers cream-colored, September, 1929, *W. A. Schipp 378*. Same locality, in jungle, a shrub of 2 m., in fruit, September, 1929, *Schipp S.26*.

EUPHORBIACEAE

Acalypha chlorocardia, sp. nov.—Frutex metralis, trunco 2.5 cm. diam., ramulis novellis crassis subteretibus viridibus subdense pilis longis albidis patentibus hirsutis, internodiis brevibus; stipulae c. 1 cm. longae lineari-subulatae longe attenuatae dense hirsutae secus margines glanduloso-denticulatae; folia crasse membranacea longissime petiolata, petiolo gracili 12-16 cm. longo hirtello et plus minusve hirsuto subtereti; lamina ovata vel late ovata, 12-15 cm. longa, 7-9 cm. lata, longe et subabrupte sensimve acuminata, acumine angusto longe attenuato, basi late rotundata et cordata, sinu 5-10 mm. longo, arcute adpresso-serrata, supra viridis, undique subsparsae hirsutae, subtus vix pallidior, undique subsparsae hispidula, basi 5-7-nervia; spicae terminales femineae 19 cm. longae subdensae, e basi interdum breviter ramosae, bracteis numerosis, inferioribus foliis conformibus breviter petiolulatis, usque ad 7 cm. longis, longe angustequae acuminatis, superioribus sessilibus et cordato-amplexantibus, c. 1 cm. longis, utroque latere c. 7-serratis, acuminatis, adpresso-hispidulis, supremis 5 mm. tantum longis, acutis, crenato-serratis; flores sessiles; ovarium dense hispidulum; styli rami pectinatim multilacinuligeri.—British Honduras: Middlesex, on river bank, alt. 60 m., September 16, 1929, W. A. Schipp S.45 (Herb. Field Mus. No. 602,936, type).

Among the Central American species of *Acalypha* this plant is conspicuous because of the very large, leaf-like pistillate bracts.

Croton Millspaughii, sp. nov.—Frutex, ramulis gracilibus, vetustioribus teretibus griseis rimosis et lenticellatis, novellis olivaceis glabris, internodiis brevibus; stipulae c. 4 mm. longae fere ad basin in lacinias paucas filiformes apice glandulo-incrassatas glabras dissectae, persistentes; folia longe petiolata alterna crasse herbacea, petiolo gracili 8-12 mm. longo glabro subtereti; lamina ovata vel oblongo-ovata, 1.7-3 cm. longa, 1-1.5 cm. lata, sensim acuminata, basi obtusa vel rotundata, utrinque glabra vel subtus hinc inde pilo stellato parvo onusta, integra vel subintegra, basi trinervia, costa utroque latere venas c. 4 inconspicuas emittente, subtus paulo pallidior, ciliata, ciliis subremotis 1-1.5 mm. longis apice glanduloso-incrassatis; racemi terminales vel ex axillis superioribus, 1-3 cm. longi, dense pauciflori, floribus 1-2 mm. longe pedicellatis; sepala floris masculi ovali-ovata 1.5 mm. longa obtusa, extus glabra vel hinc inde pilo minuto stellato induta; sepala floris feminei oblonga 2 mm. longa obtusa, extus glabra, glanduloso-ciliata; styli rami paucilacinulati, ramulis elongatis filiformibus.—Yucatan: Cozumel Island, February 21, 1899, C. F. Millspaugh 1593 (Herb. Field Mus. No. 61,593, type).

The vernacular name is "picosa." The plant has been reported as *C. ciliato-glandulosus* Ort., which it closely resembles. That common species of Mexico and northern Central America may be distinguished at a glance by its dense covering of stellate pubescence.

Pera barbellata, sp. nov.—Arbor 9-metralis, trunco 15 cm. diam., ramulis gracilibus teretibus, novellis dense stellato-lepidotis, internodiis brevibus; folia alterna breviter petiolata, petiolo crassiusculo 5-7 mm. longo lepidoto supra sulcato; lamina subcoriacea, oblongo-elliptica, 4-6.5 cm. longa, 2.5-3.5 cm. lata, abrupte acuminata, acumine obtusissimo, basi acuta vel abrupte contracta et decurrens, supra ad costam minute puberula, aliter glabra, lucida, nervis prominulis, subtus concolor, sublucida, sparse stellato-lepidota, in axillis dense breviterque barbata, costa gracili elevata, nervis lateralibus utroque latere c. 13, angulo lato adscendentibus, fere rectis, remote a margine arcuato-conjunctis, nervulis obscuris; flores in axillis vel ad nodos defoliatos fasciculati, pedicellis fructiferis 2-3 mm. longis dense stellato-puberulis; capsula (perfecta non visa) 8-10 mm. longa, minutissime denesque stellato-puberula. —British Honduras: In jungle, Mullins River road, alt. 30 m., June 8, 1929, *W. A. Schipp* 201 (Herb. Field Mus. No. 598,227, type).

In *P. arborea* Mutis, the only other species known from Central America, the leaves are mostly rounded at the base, and they are not barbate beneath.

HIPPOCRATEACEAE

Salacia belizensis, sp. nov.—Frutex scandens 9 m. longus, trunco 10 cm. diam., ramulis validis teretibus griseis minute lenticellatis; folia coriacea breviter petiolata glabra, petiolo crasso 4-7 mm. longo supra sulcato; lamina oblonga vel lanceolato-oblonga, 8-16.5 cm. longa, 3-6 cm. lata, acuminata vel longe acuminata, apice obtuso, basi acuta vel obtusa, supra lucida, costa nervisque prominulis, subtus plus minusve lucida, costa crassiuscula elevata, nervis lateralibus utroque latere c. 8, elevatis, angulo lato adscendentibus, gracilibus, curvis, irregularibus, juxta marginem conjunctis, nervulis prominulis reticulatis, margine saepe revoluta; inflorescentiae dense multiflorae cymoso-paniculatae paniculis usque ad 13 cm. longis, ramis glabris crassiusculis dichotomis, floribus 1-1.5 mm. longe pedicellatis, bracteis late ovatis 0.6-1 mm. longis acutis glabris; sepala late ovata obtusata 0.6 mm. longa glabra; petala 5 ovalia 1.5 mm. longa apice rotundata minute erosa vel fere integra; fructus globosus 2.5 cm. diam. lenticellatus, pedicello incrassato c. 1 cm. longo. —British Honduras: In jungle, Mullins River road, alt. 15 m., April 10, 1929, *W. A. Schipp* 128 (Herb. Field Mus. No. 593,117, type).

“A large climbing shrub, plentiful in this locality. Flowers green.”

Hippocratea yucatanensis, sp. nov.—Frutex alte scandens, ramulis teretibus griseis, novellis compressis sparse minuteque puberulis; petioli validi 6-10 mm. longi, supra breviter sulcati, minute puberuli; lamina elliptico-ovalis vel oblongo-elliptica, 5-9.5 cm. longa, 2.2-5 cm. lata, obtusa, basi obtusa vel acutiuscula, subcoriacea, concolor, brevissime remoteque crenato-serrata, supra glabra,

costa elevata, subtus interdum ad costam elevatam sparse puberula, aliter glabra, nervis lateralibus utroque latere c. 6, gracillimis, arcuato-adscententibus, prope marginem irregulariter conjunctis; cymae pauciflorae foliis duplo breviores, in axillis solitariae, pedunculo valido 1.2-2.5 cm. longo compresso minute puberulo; bracteae usque ad 1.5 mm. longae ovatae; pedicelli interdum 4 mm. longi, vulgo c. 1 mm.; calyx c. 2 mm. latus, sepalis late rotundatis minute ciliolatis; petala ovalia fere 4 mm. longa apice rotundata glabra; discus magnus depressus; antherae 0.8 mm. latae; fructus ignotus.—Yucatan: Kancabtsonot, May, 1917, *G. F. Gaumer 23859* (Herb. Field Mus. No. 466,318, type). Izamal, *Gaumer 718*. Chichankanab, *Gaumer 1371*. Without definite locality, *Gaumer 2366, 23994*.

Related, perhaps, to *H. elliptica* HBK., of western Mexico, in which the petals are barbate within. The plant has been reported from Yucatan as *H. obcordata* Lam.

CELASTRACEAE

Wimmeria obtusifolia, sp. nov.—Ramuli teretes, novellis obscure et minutissime puberulis; petioli graciles 4-5 mm. longi minute puberuli; lamina elliptica vel oblongo-elliptica, prope medium latissima, 3.5-4 cm. longa, 1.4-2 cm. lata, versus apicem obtusum interdum emarginatum angustata, basi acuta, concolor, ut videtur integra sed minutissime remoteque adpresso-serrulata, statu juvenili minutissime et inconspicue ad nervos puberula, costa gracili utrinque elevata, nervis lateralibus utroque latere c. 4, angulo acuto adscententibus, prope marginem irregulariter conjunctis, supra elevata; cymae in axillis solitariae, plerumque foliis duplo breviores, vulgo 2-4-florae, pedunculo gracili 8-12 mm. longo minute puberulo, pedicellis gracilibus viridibus minute puberulis 5-6 mm. longis patentibus; bracteae vix 1 mm. longae, bracteolis minutis prope basin pedicelli insertis; calyx 2.5 mm. latus, sepalis late rotundatis imbricatis viridescentibus; petala oblongo-ovalia, 3 mm. longa, apice rotundata, glabra; fructus ignotus.—Yucatan: Without definite locality, in 1917-21, *G. F. Gaumer 24259* (Herb. Field Mus. No. 552,264, type).

Closely related to *W. confusa* Hemsl., of northern and western Mexico, in which the leaves are usually smaller, widest near the apex, and conspicuously crenate.

SAPINDACEAE

Cupania auriculata, sp. nov.—Arbor 9-metralis, trunco 10 cm. diam., ramulis validis subteretibus lenticellatis minute puberulis vel glabratibus; folia 5-7 cm. longe petiolata, petiolo subtereti puberulo vel minute sericeo; foliola c. 10 alterna, 3-9 mm. longe petiolulata, petiolulo supra sulcato, oblonga, 10-12 cm. longa, 4.5-5 cm. lata, breviter acuminata vel saepe subrotundata et caudato-acuminata, acumine c. 1 cm. longo, basi obtusa vel truncata, vulgo valde inae-

qualia, uno latere interdum decurrentia, coriacea, undulata vel sinuata vel fere integra, basi latere superiore plerumque hastatolobata, lobo brevi rotundato-ovato acuto vel apiculato, supra lucida, glabra vel ad nervos minute puberula, costa nervisque elevatis, subtus glabra vel ad nervis minute sparseque sericea, costa nervisque valde elevatis, nervis lateralibus utroque latere c. 11, angulo lato adscendentibus, subarcuatis, marginem attingentibus, nervulis prominentibus arcte reticulatis; paniculae terminales et ex axillis superioribus nascentes, sessiles vel pedunculatae, foliis longiores, c. 30 cm. longae, multiramosae, dense multiflorae, angustae, ramis dense minuteque cinereo-sericeis, floribus aggregatis brevissime pedicellatis vel subsessilibus; bracteae subulatae plerumque 3-5 mm. longae; sepala oblonga vel ovalia 2-2.5 mm. longa obtusa dense puberula; petala ochroleuca sepala vix aequantia glabra; stamina petalis paullo longiora, pistillo 3-3.5 mm. longo.—British Honduras: Stann Creek Railway, in broken pine ridge jungle, alt. 15 m., July 20, 1929, *W. A. Schipp* 267 (Herb. Field Mus. No. 598,228, type).

"Flowers fragrant." The proposed species may be recognized readily by the peculiar auricled leaflets.

Talisia diphylla, sp. nov.—Arbor 12-metralis, ramulis subteretibus griseis vel fusco-ferrugineis, glabris, dense foliatis, lenticellis numerosis parvis pallidis conspersis, internodiis brevissimis; folia plerumque bifoliolata, inferiora simplicia et foliolo similia; petioli validi 2.5-6 mm. longi glabri; foliola oblonga vel oblanceolato-oblonga, 5-8 cm. longa, 1.5-3 cm. lata, apice obtusa vel interdum rotundata et breviter emarginata, versus basin sessilem obliquam acute angustata, subcoriacea, glabra, integra, supra viridia et lucida, subtus pallida et opaca, costa subtus prominente, venis lateralibus utrinque prominulis, utroque latere c. 7, fere rectis, prope marginem irregulariter conjunctis; paniculae terminales sparse ramosae, folia aequantes vel paullo longiores, 5-6 cm. longae, ramis minute puberulis, bracteis minutis, pedicellis 8-12 mm. longis puberulis; sepala ovalia c. 3 mm. longa, in statu fructifero persistentia et reflexa, utrinque minute tomentosa; fructus immaturus subglobosus 7 mm. diam. plus minusve asymmetricus, primo sparse adpresso-pilosus, mox glabratus, stylo persistente 1-1.5 mm. longo.—Yucatan: In forest, Kancabts'onot, February, 1917, *G. F. Gaumer* 23573 (Herb. Field Mus. No. 465,952, type).

It is not quite certain that this tree belongs to the genus *Talisia*, but it seems to agree better with that than with any other group of the Sapindaceae represented in Mexico and Central America. The only species known previously from Mexico, *T. olivaeformis* (HBK.) Radlk., has four leaflets.

Serjania yucatanensis, sp. nov.—Frutex alte scandens, ramulis vetustioribus subteretibus griseis, novellis brunnescentibus 6-sulcatis glabris, internodiis elongatis; corpus lignosum e centrali

subtereti et periphericis 3 parvis approximatis semiteretibus compositum; petioli validi 3-5 cm. longi glabri; folia palmatim 3-foliolata, foliolis sessilibus, ovatis, elliptico-oblongis vel ellipticis, 5-14 cm. longis, 3-7 cm. latis, versus apicem obtusum vel acutiusculum angustatis, basi acutis et abrupte in acuminationem longam petioli-formem contractis, versus apicem breviter et remote grosseque crenato-serratis vel saepius integris vel subintegris, subcoriaceis, glabris, supra viridibus, subtus multo pallidioribus; paniculae in axillis foliorum reductorum insertae, breviter vel longe pedunculatae, multiflorae; subdensae, 5-9 cm. longae, ramis sparse minuteque tomentulosas vel glabratas, pedicellis plerumque 2-3 mm. longis, bracteis minutis et inconspicuis; sepala interiora 3-3.5 mm. longa, concava, subdense tomentosa, exteriora breviora, rotundata, minus dense tomentosa; petala sepalis interioribus subaequalia, glabra; fructus (immaturus) glaber, dissepimentis latis, lateribus loculi firme coalitis, loculis 5 mm. longis latisque, irregulariter grosseque exsculptis, ala 13 mm. longa et 10 mm. lata.—Yucatan: Chichankanab, April, 1917, *G. F. Gaumer 23676* (Herb. Field Mus. No. 466,093, type). Kancabtsnot, *Gaumer 23596, 23595*. Chichankanab, *Gaumer 23715*. Without definite locality, *Gaumer 24419*; *Dr. Johnson. Cozumel Island, Millspaugh 1533, 1554*.

In a genus so complex as *Serjania*, it is difficult to suggest relationships of species with reasonable accuracy, and any suggestion is likely to be misleading. In the writer's key to the Mexican species (Contr. U. S. Nat. Herb. 23: 692. 1923) this Yucatan plant runs at once to *S. heterocarpa* Standl., a species to which it is not closely related.

RHAMNACEAE

***Colubrina guatemalensis*, sp. nov.**—Ramuli graciles teretes vel subangulati, novellis breviter sordido-pilosis, internodiis brevibus; folia alternata petiolata, petiolo gracili 7-13 mm. longo pilosulo vel puberulo; lamina subcoriacea, oblongo-ovata, 4.5-7 cm. longa, 2-3.5 cm. lata, longe acuminata, basi obtusa vel subrotundata et abrupte breviterque cuneato-decurrens, remote crenato-serrata, serraturis adpressis obtusis, supra griseo-viridis, subsparse breviterque pilosula, nervis impressis, subtus pilis brunnescentibus mollibus patentibus saepe crispulis satis dense tomentosa, trinervia, costa nervisque prominentibus, costa utrinque nervos 3-4 laterales angulo acuto adscendentes percurrentes emittente; flores in axillis fasciculati, pedicellis gracilibus 5-7 mm. longis puberulis; hypanthium statu fructifero pilosulum, sepalis reflexis late triangularibus acutis 1.5 mm. longis; capsula globosa apice depressa glabra 5-6 mm. longa; semina obovoidea 4 mm. longa lucida.—Guatemala: San Martín, Dept. Chimaltenango, alt. 1,800 m., November, 1928, *Jesús Morales R. 1230* (Herb. Field Mus. No. 599,616, type).

This Guatemalan species is clearly related to *C. Ehrenbergii* Schlecht., but in that Mexican shrub the leaves are mostly obtuse

or only acutish, and thicker and more conspicuously veined than in *C. guatemalensis*, and there is an abundant reddish tomentum on the leaves and young branches.

VITACEAE

Cissus gossypiifolia, sp. nov.—Frutex scandens, ramulis gracilibus subteretibus ferrugineis glabris, vetustioribus lenticellis magnis elevatis dense conspersis; folia longe petiolata, petiolo 2.5-5 cm. longo gracili glabro; laminae plus minusve dimorphae, glabrae, lamina foliorum majorum 9-11 cm. longa et c. 8 cm. lata, basi truncata vel breviter cordata, lateribus subparallelis et fere rectis, remote adpresso-serrulatis vel fere integris, supra medium breviter triloba, lobis lateralibus triangularibus acuminatis 1-1.5 cm. longis, lobo terminali multo latiore abrupte sensimve acuminato, lamina basi 5-nervia, lamina foliorum superiorum ovata vel elliptica, 5.5-8 cm. longa, remote et adpresse serrulata vel interdum breviter triloba, acuta vel acuminata, basi obtusa vel rotundata, basi trinervia; cymae laxae multiflorae c. 2 cm. longe pedunculatae, c. 3 cm. latae, ramis pedicellisque glabris, pedicellis validis 2-3 (in fructu ad 5) mm. longis; calyx latus c. 0.3 mm. altus truncatus; petala 4 oblonga obtusa glabra 1.8 mm. longa; bacca obovoidea 6 mm. longa apice rotundata et apiculata.—British Honduras: Honey Camp, Orange Walk, September, 1928, *C. L. Lundell 25* (Herb. Field Mus. No. 580,827, type), *26*.

The larger leaves bear a striking resemblance to those of some species of *Gossypium*, and the species may be recognized easily by their distinctive form.

Cissus formosa, sp. nov.—Frutex alte scandens, ramulis vetustioribus fusco-ferrugineis lenticellis paucis elevatis onustis, novellis subteretibus viridibus glabris, internodiis 2-5 cm. longis; petioli 1.5-5.5 cm. longi graciles glabri; laminae valde variabiles, foliorum superiorum simplices, deltoideo-rotundatae, c. 7 cm. longae et latae, abrupte breviacuminatae, basi truncatae, remote et irregulariter serratae, serraturis paucis; laminae foliorum inferiorum vulgo breviter vel profundius (vix ad medium) 3- vel rare 5-lobae, 7-14 cm. longae, 8-12 cm. latae, basi truncatae vel concavae, interdum abrupte breviterque decurrentes, lobis acutis vel acuminatis vel abrupte breviterque cuspidato-acuminatis, remote adpresso-serratis, lamina subtenui, glabra, basi 3-nervia, nervis lateralibus 3 ramos exteriores emittentibus; cymae ad axillas solitariae, intense purpureo-rubrae, 1.5-3 cm. latae, densae, multiflorae, pedunculo 1.5 cm. longo sparse puberulo, pedicellis vix 2 mm. longis; calyx 1 mm. longus subtruncatus; petala 2 mm. longa extus sparse minuteque adpresso-pilosa; bacca obscure purpureo-rubra.—Yucatan: Suitún, July, 1916, *G. F. Gaumer 23389* (Herb. Field Mus. No. 460,122, type). Chichankanab, *Gaumer 23713*. Without definite locality, *Gaumer 24312*.

Dr. Gaumer states that the plant is very showy because of the deep crimson inflorescences and fruits. Some of the other Mexican and Central American species also are strikingly handsome when in full flower. This Yucatan *Cissus* is related to *C. microcarpa* Vahl and *C. rhombifolia* Vahl, both of which have trifoliate leaves.

MALVACEAE

Abutilon Gaumeri, sp. nov.—Frutex, ramulis vetustioribus teretibus griseis vel fusco-ferrugineis glabratis, novellis dense pilis brevibus patentibus brunnescentibus stellato-tomentosis; petioli validi 1.2-3.5 cm. longi dense tomentosi; laminae inaequales et variabiles, plerumque late cordato-ovatae, interdum orbiculari-cordatae vel late rhombico-obovatae, 3-7 cm. longae, 2-5 cm. latae, longiacuminatae vel acutae vel interdum obtusae, rare rotundatae, basi plerumque leviter cordatae, interdum rotundatae, plerumque integrae, utrinque (subtus densius) dense pilis patentibus fulvis stellatis velutino-tomentosae, basi 7-nervia; flores in axillis solitarii vel plerumque 2-3-fasciculati, pedicellis subgracilibus 2-2.8 cm. longis ad medium vel paullo supra medium articulatis dense stellato-tomentosis; calyx 7 mm. longus dense pilis fulvis stellato-tomentosus, profunde 5-lobus, carpella fere aequans et eis adpressus, lobis late ovatis vel rotundato-ovatis acutiusculis; carpella plerumque 8 biovulata 7 mm. longa, apice acuta vel acutiuscula, dorso et apice dense pilis patentibus fulvis stellato-tomentosa.—Yucatan: Without definite locality, in 1917-21, G. F. Gaumer 24072 (Herb. Field Mus. No. 552,076, type). Also No. 24046.

In the key to the species of *Abutilon* in the Trees and Shrubs of Mexico this plant will run to *A. sphaerostaminum* Hochr., which is a quite different plant with cordate sepals and much larger carpels.

Sida cordifolia L.—To the synonymy of this common tropical American weed may be added the following name: *Sida ampla* Jones, Contr. West. Bot. 15: 146. 1929.

Pavonia integrifolia, sp. nov.—Suffruticosa?, caulibus dense foliatis crassiusculis stellato-pubescentibus; stipulae filiformi-subulatae c. 1 cm. longae, adpresse stellato-puberulae, virides, persistentes, erectae; folia petiolata crasse membranacea, petiolo gracili 2.5-4.5 cm. longo stellato-puberulo; lamina oblanceolato-oblonga, 13-17 cm. longa, 3.5-5 cm. lata, breviter acuminata, basin versus longe sensimque angustata, basi ipsa anguste rotundata, supra viridis, glabra, nervis non elevatis, subtus pallidior, sparse minuteque praesertim ad nervos stellato-hispidula vel fere glabra, integra vel obsolete remoteque serrulata, pilis brevibus rigidis adpressis hispidulo-ciliata, costa gracili elevata, nervis lateralibus utroque latere c. 10, angulo lato ascendentibus, arcuatis, remote a margine conjunctis; inflorescentiae umbellato-cymosae foliis longiores, longe

pedunculatae, pedunculo gracili usque ad 20 cm. longo, dichotomo, floribus paucis longissime pedicellatis, pedicellis interdum 7.5 cm. longis, minute stellato-pubescentibus; bracteae involucales c. 10, alte connatae, c. 8 mm. longae, lineares, attenuatae, virides, stellato-puberulae; calyx bracteis aequilongus, lobis triangularibus acutis vel acuminatis extus sparse minuteque stellato-puberulis; fructus 12 mm. latus depressus, carpellis 5 apice rotundatis glabris, obscure venosis, dorso costatis, dorso et lateribus aristis 3 c. 5 mm. longis spiniformibus retrorso-barbatis armatis.—Mexico: Moist shady forest, "rare," Zacuapam, Veracruz, April, 1927, *C. A. Purpus 11118* (Herb. Field Mus. No. 588,336, type).

Among the related species with spine-armed carpels, this plant is distinguished by its entire leaves.

STERCULIACEAE

Ayenia fasciculata Millsp., sp. nov. *A. ovata* Millsp. Field Mus. Bot. 1: 310. 1896, non Hemsl. 1878.—Frutex gracilis c. 2 m. altus, caule stricto rare ramoso tereti pubescente vel glabrato, ramulis brevibus alternis 1-9 mm. longis; folia subfasciculata, petiolo 2-7 mm. longo pubescente; lamina oblonga, 1-3 cm. longa, 0.5-1.5 cm. lata, acuta, biserrata, primo sparse pubescens, serius glabrata; stipulae erectae, spinulosae, rubro-brunneae, 3-4 mm. longae; flores in cymas axillares 1-3-floras solitarias dispositi; petala 5 unguiculata, lamina lata auriculata, auriculis truncatis, dorso eglandulosa; sepalia 5 ovata 2-3 mm. longa acuta viridia reflexa, sub fructu persistentia; antherae 3-loculares; gynophorum in anthesi 1-1.5 mm. longum, in fructu 3-4 mm. longum; capsula echinata.—Yucatan: Buena Vista Xbac, August, 1896, *G. F. Gaumer 1120* (Herb. Field Mus., type; duplicates in herb. Mo. Bot. Gard. and U. S. Nat. Herb.). Chichankanab, *Gaumer 2184* (Herb. Field Mus., herb. Mo. Bot. Gard., U. S. Nat. Herb.). Silam, *Gaumer 666* (Herb. Field Mus., herb. Mo. Bot. Gard., Gray Herb.). Near Piste, *Seler 3980* (Herb. Field Mus.).

The foreshortening of the lateral branches bearing the inflorescences and leaves gives them a fascicled appearance, but close examination shows that the leaves are alternate.¹

DILLENIACEAE

Tetracera mollis, sp. nov.—Ramuli teretes densissime stellato-pubescentes, pilis longioribus patentibus intermixtis; folia coriacea petiolata, petiolo crasso 1.5-2 cm. longo dense stellato-piloso et pilis longioribus piloso; lamina late oblonga vel elliptico-oblonga, 9-13.5 cm. longa, 4-7 cm. lata, apice rotundata et interdum apiculata, basi obtusa vel rotundata, interdum abrupte breviterque decurrens, versus apicem remote obscureque serrulata vel repanda, supra scaberrima, costa nervisque impressis, subtus fere concolor, ubique

¹ The description of this species is published here through the courtesy of Miss Lawrence, of the Missouri Botanical Garden, who is monographing the genus *Ayenia*.—P. C. S.

densissime molliterque stellato-pilosula, ad nervos pilis longioribus simplicibus pallidis patentibus mollibus pilosa, costa nervisque elevatis, nervis lateralibus utroque latere c. 13, angulo lato adscendentibus, arcuatis, gracilibus, percurrentibus; flores in paniculam paucifloram c. 9 cm. longam dispositi, breviter pedicellati et 3 mm. longe stipitati, bracteis parvis foliaceis, ramis dense velutino-pilosulis; sepala obovata, 7-9 mm. longa, obtusa, utrinque dense sericea; carpella 3 acuminata lucida 1 cm. longa, sparse adpresso-pilosa; semina solitaria, basi arillo profunde laciniato cincta.—British Honduras: Honey Camp, Orange Walk, October, 1928, *C. L. Lundell* 47 (Herb. Field Mus. No. 580,854, type).

In the other species of *Tetracera* known from Central America the pubescence of the lower surface of the leaves is rough and harsh, and quite unlike the soft velvety covering of *T. mollis*.

QUIINACEAE

Quina Schippii, sp. nov.—Arbor 6-7.5 m. alta, trunco 7.5-10 cm. diam., ramulis gracilibus teretibus, vetustioribus griseis plus minusve rimosis et striatis, novellis pilis plerumque patentibus fulvis hirtellis, internodiis elongatis; stipulae 7-15 mm. longae, lineares vel lineari-subulatae, erectae, persistentes, attenuatae, virides, glabrae, erectae; folia opposita vel ternata breviter petiolata, petiolo crasso 3-5 mm. longo fulvo-hirtello; lamina subcoriacea, oblongo-lanceolata, 8-20 cm. longa, 2-7 cm. lata, longe angustequae acuminata, acumine apice obtuso, basin versus longe sensimque attenuata, utrinque glabra vel tantum ad costam prope basin hirtella, supra viridis, lucida, costa nervisque prominulis, subtus paullo pallidior, costa gracili elevata, nervis lateralibus utroque latere c. 9, prominentibus, valde adscendentibus, arcuatis, gracilibus, marginem fere attingentibus, inter nervos creberrime pulchreque lineolata; racemi solitarii vel fasciculati 1-4.5 cm. longi simplices, pauci- vel multiflori, bracteis ovatis acutis ciliatis, rhachi dense hirtella, pedicellis 1.5-3 mm. longis validis glabris; sepala 4 ovalia vel rotundata, 1.5-1.8 mm. longa, apice rotundata, ciliata; petala 4 rotundata 2.5 mm. longa, apice rotundata, glabra, alba, ciliolata; stamina petalis breviora, filamentis gracilibus glabris, antheris globosis c. 0.5 mm. longis; bacca oblonga glabra 8 mm. longa, apice obtusa vel subtruncata, stylis 2 persistentibus coronata.—British Honduras: In jungle, Middlesex, alt. 60 m., July 13, 1929, *W. A. Schipp* 238 (Herb. Field Mus. No. 598,219, type). Mullins River road, in jungle, alt. 30 m., June 20, 1929, *Schipp* 231.

The only other known Central American representative of this family is *Q. panamensis* Standl., of Panama, in which the pubescence is closely appressed, the petioles much longer, and the leaves abruptly caudate-acuminate.

PASSIFLORACEAE

Passiflora yucatanensis Killip, sp. nov.—Herba scandens 2.5-4.5 m. longa, caulibus 4-5-angulatis striatis puberulis; stipulae

falcato-subulatae, 2-3 mm. longae, 0.5 mm. latae; petioli 1-1.5 cm. longi puberuli eglandulosi; lamina 4-5 cm. longa, 6-8 cm. lata, apice biloba vel obscure triloba (lobis lateralibus rotundatis, lobo mediano truncato vel acutiusculo), basi rotundata vel truncata, subtus paribus 3-5 ocellorum onusta, membranacea vel subcoriacea, supra glabra, subtus praesertim ad margines puberula; bracteae setaceae 2 mm. longae c. 5 mm. infra calycem insertae; flos 3-3.5 cm. latus; sepala oblongo-lanceolata, 1.3-1.6 cm. longa, 0.4 cm. lata, obtusa; petala oblongo-lanceolata, 8-9 mm. longa, 4 mm. lata, obtusa; coronae filamenta biseriata, exterioribus 4-5 mm. longis erectis 3-angulatis, medio paullo dilatatis, interioribus capillaribus 2 mm. longis; operculum membranaceum, arcte plicatum, margine minute fimbriato incurvo; gynophorum gracile 1-1.2 cm. longum striatum glabrum; antherae lineari-oblongae 4 mm. longae, 0.9 mm. latae; ovarium anguste ovoideum dense albo-villosum; styli 5 mm. longi clavati.—Yucatan: Cozumel Island, in 1885, *G. F. Gaumer 101* (Gray Herb., type; duplicate in herb. Kew.).

This collection has been reported as "*Passiflora Andersonii* DC.?", a species of the islands of St. Lucia and Dominica, related to *P. rotundifolia* and quite distinct from *P. yucatanensis*.

The foliage of this species suggests that of some of the forms of *P. biflora*, but the Yucatan plant differs from that species by its relatively shorter and erect outer corona filaments, its elongate slender gynophore, and its longer peduncles.

BEGONIACEAE

Begonia Calderonii, sp. nov.—Herba brevicaulis, caule ut videtur adscendente vel prostrato, dense pilis gracillimis villosa; stipulae ovatae subscariosae c. 1 cm. longae, longe subulato-acuminatae, ferrugineae, sparse villosae vel glabratae; folia longissime petiolata, petiolo gracillimo 10 cm. longo et ultra, sparse pilis longis ferrugineis gracillimis villosa; lamina 1.5-2.5 supra basin peltata, late ovata vel rotundato-ovata, 7-10 cm. longa et 5-6 cm. lata, subabrupte longiacuminata, basi late rotundata, interdum brevissime supra medium triloba, remote obscureque repando-denticulata vel subintegra, supra viridis, glabra, subtus ad nervos sparse longipilosa; cymae folia aequantes vel eis longiores, dichotomae, c. 6 cm. longae, pauciflorae, floribus fertilibus in statu fructifero c. 2 cm. longe pedicellatis, pedicellis gracillimis glabris vel hinc inde longe villosis; capsula lanceolato-oblonga 10-12 mm. longa, 5 mm. lata, superne attenuata, angulo uno in alam 1.5 cm. longam tenuem obtusam venosam sursum paullo curvatam producta.—Salvador: Cerro de Apaneca, in 1928, *Salvador Calderón 2416* (Herb. Field Mus. No. 580,408, type).

The available material is rather fragmentary, and in fruit only, but it represents a well-marked species which I have been unable to find described.

LYTHRACEAE

Heimia salicifolia (HBK.) Link.—This member of the family Lythraceae is of occasional occurrence over a large area of tropical America. It receives another addition to its synonymy in a name which was attributed to another family by its author: *Ludwigia tepicana* Jones, Contr. West. Bot. 15: 131. 1929.

RHIZOPHORACEAE

Cassipourea podantha Standl. Field Mus. Bot. 4: 241. 1929.

The range of this species, which was described from Panama, is extended widely by the following collections recently studied: British Honduras: Honey Camp, September, 1929, *C. L. Lundell* 427. Middlesex, alt. 60 m., in jungle, a tree of 9 m., the trunk 12.5 cm. in diameter, September, 1929, *W. A. Schipp* 322.

MYRTACEAE

Eugenia yucatanensis, sp. nov.—Frutex, ramulis vetustioribus subteretibus griseis, novellis subcompressis dense albido-strigillosis, internodiis 1.5-3.5 cm. longis; petioli validi 5-7 mm. longi supra anguste sulcati minute strigillosi; lamina elliptica, 5.5-8 cm. longa, 2.5-3.5 cm. lata, abrupte acuminata, acumine lato 1 cm. longo apice rotundato, basi rotundata vel obtusissima, subcoriacea, supra opaca, glabra vel glabrata, costa impressa, concolor, subtus ad costam elevatam minute strigillosa, aliter glabrata, nervis lateralibus utroque latere c. 10, gracillimis, inconspicuis, angulo lato divergentibus, fere rectis, in nervum collectivum 2 mm. a margine distantem conjunctis, margine subrevoluto, lamina opaca sed dense glanduloso-puncticulata; flores in racemos breves solitarios axillares sessiles vel breviter pedunculatos 2-2.5 cm. longos c. 8-flores dispositi; bractee ovato-triangulares c. 1 mm. longae; pedicelli 3-5 mm. longi divaricati dense albido-strigillosi; ovarium dense albido-strigillosum; sepalia 4 rotundata 2.5 mm. longa puberula, in anthesi patentia; petala ovalia vel suborbicularia 4 mm. longa apice rotundata dense glanduloso-punctata glabra ciliata.—Yucatan: Izamal, in 1888, *G. F. Gaumer* (Herb. Field Mus. No. 181,609, type).

Related to *E. Purpusii* Standl., of Oaxaca, which differs in its obtuse leaves and larger flowers.

Eugenia Gaumeri, sp. nov.—Ramuli vetustiores validi teretes ochracei, novellis dense albido-strigosis dense foliatis, internodiis plerumque 1.2-2.5 cm. longis; petioli validi 2-3 mm. longi puberuli vel glabrati; lamina oblonga, lanceolato-oblonga vel elliptico-oblonga, medio vel infra medium latissima, 4-5.5 cm. longa, 1.3-1.8 cm. lata, versus apicem obtusum angustata, apice supremo vulgo rotundato, versus basin acutam cuneatim angustata, subcoriacea, supra intense

viridis, primo praesertim ad costam sparse strigosa, cito glabrata, sublucida, costa impressa, subtus pallidior, primo albedo-strigosa sed mox glabrata, costa gracili elevata, nervis lateralibus utroque latere c. 7, inconspicuis, gracillimis, angulo acuto adscendentibus, fere rectis, prope marginem in nervum collectivum distinctum conjunctis, marginibus subrevolutis, lamina glandulis parvis dense pellucido-punctata; flores plerumque ad axillas 3-6-fasciculati, interdum breviter racemosi, rhachi usque ad 3 mm. longa, pedicellis gracilibus 6-15 mm. longis dense albedo-strigillosis; alabastra vix 3 mm. diam.; ovarium dense albo-strigillosum; calycis lobi 4 ovales vel suborbiculares, 2 mm. longi, apice rotundati, glanduloso-punctati, strigillosi, patentes vel post anthesin reflexi; petala rotundata sepalis fere duplo longiora, dense glandulis parvis brunneis punctata, extus sparse puberula.—Yucatan: Kancabtsonot, May, 1917, *G. F. Gaumer* 23843 (Herb. Field Mus. No. 466,294, type). Without definite locality, *Gaumer* 23984, 24073.

Related to *E. avicenniae* Standl., of Guerrero, which differs in its elongate inflorescence.

***Calyptranthes Karlingii*, sp. nov.**—Ramuli acute tetragoni crassiusculi glabri, internodiis 1.5-2 cm. longis; folia breviter petiolata, petiolo crasso 3-6 mm. longo supra sulcato; lamina crasse coriacea, lanceolato-oblonga, 5-9 cm. longa, 2-3.5 cm. lata, sensim acuminata, acumine obtuso, basin versus paullo angustata, basi ipsa lata et late rotundata vel fere truncata, glabra, concolor, utrinque densissime glanduloso-punctulata, costa supra subimpressa, subtus elevata, crassiuscula, nervis lateralibus subtus obscuris, numerosis, rectis, prope marginem nervum collectivum obscurum efformantibus, margine revoluti; inflorescentia cymoso-paniculata axillaris dense multiflora, 2-3.5 cm. longa et lata, ramis paucis divaricatis compressis crassis glabris vel sparsissime puberulis, pedunculo acute tetragono c. 3.5 cm. longo, glabro, floribus dense aggregatis sessilibus vel brevissime pedicellatis; calyx circumscisse dehiscent, parte persistente turbinato-campanulata 2-2.5 mm. longa basi acutiuscula sparse puberula vel fere glabra, calyce in alabastro apice mucronato; petala rotundato-obovata c. 2 mm. longa apice rotundata glabra; stamina numerosissima 3-4 mm. longa, filamentis filiformibus glabris.—British Honduras: Tower Hill Estate, in 1927, *J. S. Karling* 39 (Herb. Field Mus. No. 599,824, type).

C. Millspaughii Urban, which also occurs in British Honduras, differs in having oblong-elliptic leaves which are acute at the base, and in its terete branchlets.

MELASTOMACEAE

***Miconia Schippii*, sp. nov.**—Frutex 2-metralis, trunco 2.5 cm. diam., ramulis gracilibus obtuse quadrangularibus viridibus; novellis hinc inde setuloso-hispidis, internodiis elongatis, inferioribus glabris; folia petiolata crasse membranacea, petiolo gracili

1.5-3.5 cm. longo hispido; lamina lanceolato-oblonga, 11-17 cm. longa, 4-6.5 cm. lata, longiacuminata, basi rotundata vel obtusa, quinquenervia, nervis exterioribus multo gracilioribus, supra viridis, undique sparse pilis longis rigidis lutescentibus hispida, subtus paullo pallidior, tantum ad nervos pilis rigidis brevibus elongatisve patentibus vel adpressis hispida, costa nervisque gracilibus prominentibus, nervulis transversis prominulis; panicula 2.5 cm. longe pedunculata anguste thyrsiformis, 7 cm. longa, 3 cm. lata, ramis ferrugineo-hispidis adscendentibus brevibus, floribus aggregatis sessilibus; hypanthium 1.5 mm. longum subglobosum glabrum; calyx c. 0.7 mm. longus breviter lobatus, lobis latissime triangularibus obtusiusculis apice pilis 3-4 brevibus onustis; petala alba late oblonga 2.5-3 mm. longa glabra apice retusa erecta.—British Honduras: Big Creek, edge of forest, alt. 30 m., June 11, 1929, W. A. Schipp 220 (Herb. Field Mus. No. 598,221, type).

"Occasional. Leaves flushed with dark red on the lower surface."

Miconia belizensis, sp. nov.—Arbor 6-metralis, trunco 10 cm. diam., ramulis novellis crassiusculis ferrugineis densissime minuteque adpresso-furfuraceis; folia petiolata, crasse membranacea, petiolo gracili 2.5-4.5 cm. longo subtereti minute et densissime ferrugineo-furfuraceo; lamina elliptico-oblonga vel ovato-oblonga, 12-22 cm. longa, 4.5-10.5 cm. lata, versus apicem angustata et abrupte longiacuminata, acumine angusto attenuato, basi obtusa vel anguste rotundata et 5-nervia, arcte repando-dentata, dentibus 1-1.5 mm. longis obtusis, supra viridis, glabra, nervi non elevatis, subtus pallide brunnescens, ubique minutissime stellato-tomentella, costa nervisque gracilibus elevatis, nervulis transversis crebris prominulis rectis angulo lato divergentibus parallelis; panicula terminalis 1.5 cm. longe pedunculata, c. 5 cm. longa, dense multiflora, ramulis crassis rigidis dense tomento ferrugineo adpresso stellato-tomentellis, floribus sessilibus vel brevissime crasseque pedicellatis; bacca immatura subglobosa 6 mm. longa dense pilis minutissimis stellatis granuloso-tomentella, basi late rotundata, calyce persistente 1-1.5 mm. longo coronata, calycis dentibus brevissimis late rotundatis.—British Honduras: Middlesex, in jungle, alt. 60 m., September 27, 1929, W. A. Schipp 395 (Herb. Field Mus. No. 602,934, type).

The collector's notes state that the flowers are white, with purple stamens, but no flowers are present on the specimen at hand. Because of the absence of flowers it is impossible to determine accurately the position of this species within the genus, but it differs essentially from all the species of which I have examined material.

Maleta cuneata, sp. nov.—Frutex 3-metralis, trunco 10 cm. diam., ramis crassis teretibus viridibus vel olivaceis, dense pilis rigidis divaricatis basi paullo incrassatis hispidis, internodiis elongatis; folia opposita longiuscule petiolata, petiolo crasso 1-1.5 cm. longo dense hispido apice vesiculifero, vesiculo parvo c. 1 cm.

longo pro maxima parte laminae basi circumdato, dense hispido; lamina obovata, 8.5-14.5 cm. longa, 4-6.5 cm. lata, apice acuta et abrupte caudata, cauda lineari 5-10 mm. longa, basin versus longe cuneato-attenuata, firme membranacea, integra, utrinque pilis longis rigidis patentibus densissime hispida, 5-plinervia; flores in axillis et ad nodos defoliatos dense fasciculati, sessiles vel breviter pedicellati, 5-meri; calyx 2.5 mm. longus subglobosus dense hispidus, dentibus brevissimis; petala alba lanceolato-ovata 2 mm. longa, versus apicem obtusiusculum longe attenuata, glabra; antherae oblongae obtusae fere 2 mm. longae.—British Honduras: Middlesex, in dense forest along mountain stream, alt. 75 m., September 1, 1929, *W. A. Schipp* 320 (Herb. Field Mus. No. 603,048, type).

The collector states that the fruits are orange-colored, but none are present on the specimens. The species is a well-marked one, easily recognized by the shape of the leaves and by their abrupt tail-like tips.

Henrietteila macrocalyx, sp. nov.—Arbor 7.5 m. alta, trunco 10 cm. diam., ramulis vetustioribus crassis brunnescentibus minute rimosis, novellis obtuse tetragonis ferrugineis pilis arcte adpressis incrassatis dense strigosis, internodiis c. 2 cm. longis; folia breviter petiolata, petiolo c. 1 cm. longo dense hispido-strigoso; lamina coriacea, integra, oblongo-obovata, 10-15.5 cm. longa, 4.5-6.5 cm. lata, apice acuta et abrupte breviterque cuspidato-acuminata, acumine angusto 5-7 mm. longo attenuato, basin versus cuneato-angustata, supra luteo-viridis, praesertim ad nervos hispidulo-strigosa, subtus pallida, ubique minute stellato-tomentosa, pilis brevibus rigidis basi stellato-radiatis intermixtis, ad costam nervosque hispidulo-strigosa, triplinervia, nervis subtus elevatis, gracilibus, nervulis transversis numerosis prominentibus crebris parallelis angulo fere recto abeuntibus, margine saepe revoluti; flores pauci ad nodos defoliatos fasciculati, pedicellis crassis 3-4 mm. longis dense ferrugineo-strigosis; calyx in anthesi 1 cm. longus oblongo-campanulatus, extus densissime pilis brevibus incrassatis arcte adpressis strigosus, lobis 5 ovato-triangularibus 4-5 mm. longis subulato-acuminatis.—British Honduras: Stann Creek Railway, in swampy jungle, near sea level, September 6, 1929, *W. A. Schipp* 388 (Herb. Field Mus. No. 603,049, type).

The collector reports that the petals are white, but none are present on the specimens I have examined. The species is noteworthy in the genus for its very large flowers.

MYRSINACEAE

Parathesis Storkii, sp. nov.—Arbor parva, ramulis crassiusculis glabris, internodiis brevibus, vetustioribus subteretibus ochraceis rimosis; folia petiolata rigide membranacea, elliptica vel oblongo-elliptica, 5-8 cm. longa, 2-4 cm. lata, acuta vel breviter acuminata, basi acuta, integra, glabra, supra viridia, densissime

punctis minutis fuscis conspersa, nervis prominulis, subtus paullo pallidiora, nigro-puncticulata et plus minusve lineolata, costa gracili elevata, nervis lateralibus utroque latere c. 10, angulo lato divergentibus, gracillimis, prominulis, juxta marginem conjunctis, nervulis paucis obscuris reticulatis, margine revoluti; inflorescentiae axillares bipinnatim paniculatae, longe pedunculatae, laxe multiflorae, c. 7 cm. longae et 8 cm. latae, pedunculo gracili c. 4 cm. longo, floribus umbellatis, umbellis 2-7-floris, pedicellis gracilibus 3-8 mm. longis glabris, bracteis lanceolato-linearibus 1-1.5 mm. longis; calyx 1.5-2 mm. longus, sepalis breviter connatis triangulari-ovatis acutis minutissime puberulis; corolla in alabastro 5 mm. longa, ovata, acuta vel acuminata, minute lepidoto-puberula, petalis breviter connatis lanceolatis attenuatis intus villosulo-puberulis; stamina petalis multo breviora, antheris lanceolato-oblongis acuminatis 2 mm. longis dorso nigris, filamentis crassis 1-1.5 mm. longis; stylus gracilis c. 6 mm. longus, prope basin ut ovarium breviter pilosulus; fructus ruber globosus 5-6 mm. latus, densissime nigro-punctatus.—Costa Rica: San Cristóbal Road, alt. 1,800 m., June 14, 1928, H. E. Stork 2560 (Herb. Field Mus. No. 589,145, type).

Apparently a relative of the Guatemalan *P. pleurobotryosa* Donn. Smith, in which the branches are densely ferruginous-villous.

OLEACEAE

***Linociera panamensis*, sp. nov.**—Arbor 12-15-metralis, trunco 30-38 cm. diam., omnino glabra, ramulis gracilibus griseis vel ochraceis, lenticellis paucis pallidis elevatis conspersis, internodiis brevibus; folia opposita petiolata subcoriacea, petiolo gracili 1-1.5 cm. longo supra late sulcato; lamina obovato-oblonga, elliptico-oblonga vel oblanceolato-oblonga, 10-16.5 cm. longa, 4-5.5 cm. lata, abrupte acuminata, acumine angusto obtuso, basi acuta vel acuminata, interdum abrupte contracta et longe decurrens, supra viridis, costa impressa, nervis non elevatis, subtus fere concolor, costa gracili elevata, nervis lateralibus utroque latere c. 10, gracilibus, prominulis, angulo lato adscendentibus, irregularibus, prope marginem conjunctis, nervulis obsoletis; inflorescentiae axillares et terminales cymoso-paniculatae, foliis plerumque breviores, ramis rigidis brevibus patentibus, pedicellis rectis rigidis 4-9 mm. longis, bracteis linearibus vel subulatis 2-3 mm. longis; calyx persistens, laciniis 4 c. 1 mm. longis triangularibus obtusis patentibus; drupa alba compressa oblongo-elliptica 2 cm. longa, 1 cm. lata, acuta, basi acutiuscula, utrinque costata.—Panama: Flat Rock, region of Almirante, Province of Bocas del Toro, in 1928, G. P. Cooper 553; Yale No. 12186 (Herb. Field Mus. No. 579,733, type).

"A tree with fluted trunk and no buttresses. Said to become very large. The burning wood is reported to have the odor of roses, and the flowers are stated to have the same odor."

The only other *Linociera* known from Central America is *L. oblanceolata* Robinson, of British Honduras, which has narrow leaves, pubescent branchlets, and terete fruit. That species, known heretofore only from the type, has been collected recently in British Honduras: Crique Negra, March 27, 1929, *N. S. Stevenson 106* (Yale No. 14890). It is reported to be a small tree, and the vernacular name is given as "wild cocoplum."

EBENACEAE

Diospyros cuneata, sp. nov.—Ramuli teretes, grisei vel brunnescentes, rimosi, novellis sparse strigillosis mox glabratis, dense foliatis; petioli 2-3 mm. longi strigillosi vel glabrati; lamina plerumque cuneato-obovata vel anguste obovata, 4-8.5 cm. longa, 1.5-3.5 cm. lata, apice obtusa vel rotundata, basin acutum versus cuneatim angustata, supra viridis, lucida, ad costam minute puberula vel glabrata, subtus paullo pallidior, statu juvenili sparsissime strigillosa sed cito glabrata, venis utrinque prominulis, nervis lateralibus utroque latere c. 5, gracilibus, angulo acutissimo adscendentibus, nervulis laxae et irregulariter reticulatis, margine plerumque plus minusve revoluti; flores masculi in cymas axillares plerumque 3-4-floras 2-4 mm. longe pedunculatas dispositi, pedicellis validis usque ad 2 mm. longis dense strigillosis; calyx campanulatus 3.5 mm. longus dense sericeo-strigillosus breviter 4-lobus, lobis late triangularibus vel rotundatis tubo plus quam duplo brevioribus; corolla hypocrateriformis extus dense sericea 6-7 mm. longa, lobis 4 tubo brevioribus; antherae 2.5 mm. longae; calyx fructifer 13-15 mm. latus 4-6-lobus, lobis apice late rotundatis, extus sparse strigillosis, intus dense sericeis; bacca (tantum imperfecta visa) glabra.—Yucatan: Without definite locality, in 1917-21, *G. F. Gaumer 24098* (Herb. Field Mus. No. 552,101, type). Izamal, *Gaumer 700*. Without definite locality, *Gaumer 24211, 23955*.

This clearly marked species is not closely related to any of the other Mexican species of *Diospyros*.

APOCYNACEAE

Plumeria multiflora, sp. nov.—Ramuli teretes c. 13 mm. crassi prope apices dense foliati, inferne cicatricibus magnis foliorum delapsorum conspersi, glabri; petioli graciles 2 mm. crassi minute puberuli vel glabrati, 2-2.5 cm. longi; lamina anguste oblongo-cuneata, 6-9.5 cm. longa, 2-3 cm. lata, apice late rotundata et apiculata, versus petiolum sensim longiattenuata, rigide coriacea, supra obscure viridis et lucida, glabra, costa profunde impressa, subtus pallidior, dense pilis brevibus intertextis tomentosa, costa crassa glabra, nervis lateralibus utroque latere c. 18, arcuato-divaricatis, nervulis arcte reticulatis, marginibus revolutis; inflorescentia prope apicem rami lateralis, glabra, dense multiflora, cymis

numerosis in umbellam terminalem dispositis, pedunculo valido 9-13 cm. longo; bracteae vix 1 mm. excedentes sed multo latiores, deciduae; pedicelli 5-9 mm. longi; calyx 1.5 mm. longus, lobis rotundatis apiculatis; corolla c. 4 cm. longa, fauce 4 mm. lata, lobis angustis tubum aequantibus.—Yucatan: Kancabtsonot, May, 1917, *G. F. Gummer 23880* (Herb. Field Mus. No. 466,358, type).—British Honduras: Honey Camp, Orange Walk, in 1928, *C. L. Lundell LP10*.

This is not closely related to any of the five *Plumerias* hitherto reported from Mexico.

Tabernaemontana Schippii, sp. nov.—Arbor 15-metralis, trunco 20 cm. diam., omnino glabra, ramulis crassiusculis subteretibus brunnescentibus, in sicco plus minusve striatis, internodiis 1.5-4 cm. longis; folia opposita subcoriacea breviter petiolata, petiolo 5-15 mm. longo gracili supra late sulcato; lamina anguste lanceolato-oblonga, 8-18 cm. longa, 2.5-5 cm. lata, longe acuminata, acumine angusto obtuso, basin versus acute attenuata, supra lucida, in sicco fusca, nervis subimpressis, subtus pallidior, costa gracili elevata, nervis lateralibus utroque latere c. 13, angulo lato adscendentibus, arcuatis, gracilibus, prominulis, juxta marginem conjunctis, nervulis obsoletis, margine revoluti; inflorescentiae cymoso-paniculatae terminales subdense multiflorae, sessiles vel subsessiles, multo ramosae, ramis gracilibus, bracteis ovatis c. 1 mm. longis acutis persistentibus, pedicellis gracilibus plerumque 8-10 mm. longis; calyx profunde 5-lobus, laciniis ovatis 2 mm. longis obtusis subpatentibus; corolla alba, tubo 8 mm. longo basi ampliato, lobis late obovatis c. 7 mm. longis; antherae anguste oblongae 2 mm. longae inclusae.—British Honduras: In jungle, Big Creek, alt. 15 m., April 20, 1929, *W. A. Schipp 168* (Herb. Field Mus. No. 593,107, type).

Called "cojotón." "Beautiful in blossom, the flowers sweet-scented. Wood white and soft, full of latex."

The species is marked by the long and narrow, long-acuminate leaves, which are very lustrous on the upper surface.

Aspidosperma Woronovii, sp. nov.—Ramuli subteretes graciles cinerei vel ochracei rimosi, lenticellis elevatis pallidis conspersi, internodiis brevibus vel elongatis, novellis dense fulvo-puberulis; folia alterna breviter petiolata, petiolo 3-5 mm. longo densissime pilosulo; lamina oblonga vel elliptica, 4.5-6 cm. longa, 2-3.5 cm. lata, apice rotundata, basi obtusa vel rarius acutiuscula, subcoriacea, supra viridis, lucida, primo fulvo-tomentulosa, serius puberula vel glabrata, costa nervisque prominulis, nervulis manifestis prominulis reticulatis, subtus pallida, glauca, primo dense fulvo-tomentosa, glabrescens, costa gracili elevata, nervis lateralibus utroque latere c. 10, angulo acuto adscendentibus, prominulis, fere rectis, juxta marginem arcuato-conjunctis; inflorescentiae solitariae

oppositifoliae graciliter 3-15 mm. longe pedunculatae cymosae, floribus in capitula pauca dense multiflora 5-7 mm. lata sessilia vel breviter pedunculata dispositis, ramis dense fulvo-pilosulis, bracteis minutis lanceolato-subulatis; calyx 2.5 mm. longus puberulus, lobis 5 ovato-ellipticis tubo subaequalibus obtusis; corolla in alabastro 3 mm. longa extus glabra, tubo intus sparse pilosulo, lobis 5 ovatis obtusis tubo fere duplo brevioribus.—Colombia: Quebrada de Mambucá, Dept. Huila, August 29, 1926, *G. Woronow* 7075 (Leningrad herbarium, type).

Apparently the only other member of the genus described from Colombia is *A. ellipticum* Rusby, which has practically glabrous leaves on longer petioles.

Echites yucatanensis Millsp., sp. nov.—Frutex gracilis scandens omnino glaber, caulibus teretibus, internodiis elongatis; glandulae numerosae parvae conicae interpetiolares ad basin petioli insertae, petiolo 6-15 mm. longo; lamina valde variabilis, vulgo late ovata, ovato-elliptica vel elliptico-oblonga, 6-10 cm. longa, 2.5-5 cm. lata, sensim vel subabrupte acuminata vel longiacuminata, basi rotundata et abrupte decurrens, interdum panduriformis, infra medium breviter vel profunde constricta vel breviter triloba, lobis basalibus late rotundatis vel rare acutis, supra lucida, subtus opaca et plus minusve pallidior, venis utrinque prominenti-reticulatis; flores cymosi, cymis axillaribus umbelliformibus, densis, c. 6-floris, pedunculo valido c. 2 cm. longo, pedicellis validis 5-9 mm. longis; bractee lineari-subulatae 1.5-2.5 mm. longae; calycis lobi 3.5-4 mm. longi lanceolati longiattenuati, plerumque obscure ciliolati vel denticulati; corolla 5-5.5 cm. longa, tubo gracillimo (2 mm. crasso) 1.5 cm. longo, parte superiore abrupte dilatata (6 mm. crassa) et 1.5 cm. longa, supra sensim contracta et 2.5 mm. lata, postea in faucem brevem infundibuliformem expansa, limbo 3.5-4 cm. lato; antherae 8 mm. longae versus apicem longiattenuatae; folliculi 19-21 cm. longi, 4 mm. crassi.—Yucatan: Chichankanab, *G. F. Gaumer* 1979 (Herb. Field Mus. No. 58,777, type). Tical, *Gaumer* 23816. Without definite locality, *Gaumer* 1979, 24039.

The nearest relative of this plant is *E. umbellata* Jacq., in which the leaves are usually rounded at the apex, dull, and not conspicuously reticulate, nor are they ever panduriform, so far as the ample herbarium material shows.

Echites pinguifolia, sp. nov.—Frutex scandens, caulibus gracilibus teretibus, vetustioribus brunnescentibus, novellis sparse puberulis vel hispidulis, internodiis elongatis; folia petiolata, petiolo 10-15 mm. longo gracili sparse puberulo; lamina crasse membranacea, ovata vel ovato-elliptica, 5-8 cm. longa, 2.5-4.5 cm. lata, abrupte cuspidato-acuminata, acumine 5-10 mm. longo angusto attenuato acuto, basi late rotundata et interdum abrupte

breviterque decurrens, integra, supra asperula, sparse puberula, costa prominula, subtus paullo pallidior, mollis, ubique dense minuteque velutino-pilosula, costa gracili elevata, nervis lateralibus utroque latere c. 6, angulo acuto adscendentibus, inaequalibus, remote a margine arcuato-conjunctis; racemi axillares crasse 1.5-2 cm. longe pedunculati, dense multiflori, rhachi crassa minute pilosula, bracteis brevibus subulatis deciduis, pedicellis plerumque 6-8 mm. longis crassiusculis sparse puberulis vel fere glabris; calyx extus glaber 3-3.5 mm. longus profunde 5-fidus, laciniis lanceolato-attenuatis erectis; corolla extus glabra, tubo gracillimo 18 mm. longo 1.5 mm. crasso, fauce obconica 1.5 cm. longa ore 12 mm. lata, lobis latis obtusis c. 1 cm. longis, corolla in alabastro acutiuscula.—Yucatan: Without locality, *G. F. Gaumer 815* (Herb. Field Mus. No. 36,618, type).

The type specimen has been determined as *E. pandurata* A. DC., a Mexican species, which is described as having obtuse calyx lobes. *E. pinguifolia* is similar in general appearance to *E. umbellata* Jacq., but that is a glabrous plant with very thick leaves.

Echites cuspidifera Blake, Contr. Gray Herb. 52: 79. 1917.

The type was collected at Manatee Lagoon, British Honduras, *M. E. Peck 35*. Another collection may now be reported from the same country: Six mile pine ridge, in open forest, a vine 3 m. long, the stem 2.5 cm. thick, the corollas yellow, September, 1929, *W. A. Schipp 368*.

Mandevilla denticulata Blake, Contr. Gray Herb. 52: 81. 1917.

Type from New Haven, British Honduras, *M. E. Peck 696*. Another collection is now at hand: British Honduras: Middlesex, in secondary forest, alt. 60 m., a vine 6 m. long, the stem 3.5 cm. thick, the large flowers yellow, with reddish brown tube, September, 1929, *W. A. Schipp S.6*.

Forsteronia viridescens Blake, Contr. Gray Herb. 52: 80. 1917.

The type is *M. E. Peck 450* from Manatee Lagoon, British Honduras. The following collection is conspecific: British Honduras: Middlesex, in jungle, alt. 60 m., September, 1929, a vine 4.5 m. long, the stem 5 cm. thick, the small flowers white, *W. A. Schipp 360*.

ASCLEPIADACEAE

Vincetoxicum crassifolium, sp. nov.—Volubilis, caulibus validis subcompressis ad margines dense pilis rigidis patentibus lutescentibus 1 mm. longis pilosis, ad latera dense puberulis et

recurvo-hispidulis; petioli validi 6-14 mm. longi ut caules pubescentes; lamina ovato-ovalis, 4-6.5 cm. longa, 2.3-4 cm. lata, apice acutiuscula vel abrupte acuta, basi rotundata et subcordata vel breviter cordata, sinu vix 3 mm. longo fere clauso, coriacea, opaca, supra minute et subdense velutino-hirtella, subtus pilis brevibus fulvis dense velutino-pilosa; cymae axillares pauciflorae, pedunculo valido 3-6 mm. longo, pedicellis usque ad 11 mm. longis dense minuteque glanduloso-pilosis; calycis lobi lanceolato-ovati 3.5 mm. longi, acuminati vel acutiusculi, minute pubescentes et ciliolati; corolla viridescens 1 cm. longa, 1.5 cm. lata, extus dense puberula, intus glabra, conspicue reticulato-venosa, lobis rotundato-ovalibus tubo longioribus, apice late rotundatis; corona annuliformis brevissima, corollae adnata, in appendices 5 remotas carnosas anguste triangulares acutiusculas fere 2 mm. longas protracta.—Yucatan: Chichankanab, April, 1917, *G. F. Gaumer 23704* (Herb. Field Mus. No. 466,127, type). *Kancabtsonot, Gaumer 23884*.

Vincetoxicum Schippii, sp. nov.—Suffrutex(?) scandens, caulibus gracillimis puberulis vel scaberulis, internodiis elongatis; folia longe petiolata, membranacea, petiolo gracili c. 4.5 cm. longo fere glabro; lamina ovato-oblonga vel oblonga, 11.5-12.5 cm. longa, 5-5.5 cm. lata, acuminata, acumine obtusiusculo, basi profunde cordata, sinu fere 2 cm. longo rotundato, lobis basalibus late rotundatis, supra glabra, nervis prominulis, subtus paullo pallidior, sparse scaberula vel fere glabra, costa gracili elevata, nervis lateralibus utroque latere 5-6, prominentibus, remote a margine conjunctis; flores graciliter pedicellati, pedicellis c. 2.5 cm. longis sparse puberulis; sepala ovata 12-13 mm. longa, basi 6-8 mm. lata, versus apicem obtusiusculum sensim angustata, pallide viridia, glabra; corolla extus glabra viridis c. 3.5 cm. lata fere ad basin 5-loba, lobis oblongis c. 2 cm. longis anguste sensimque acuminatis, 4 mm. latis, intus glabris; corona 5 mm. lata, breviter annularis, minute multicrenulata, minute ciliolata.—British Honduras: Middlesex, in open places, alt. 60 m., September 15, 1929, *W. A. Schipp S.19* (Herb. Field Mus. No. 602,928, type).

The material upon which this description is based is very fragmentary, but the plant can not be referred satisfactorily to any of the species reported heretofore from Central America.

Dictyanthus yucatanensis, sp. nov.—Volubilis, caulibus gracilibus, vetustioribus ochraceis, novellis satis dense hirsutis, internodiis elongatis; folia membranacea longe petiolata, petiolo gracillimo 2-4.5 cm. longo breviter hirsuto; lamina late ovato-cordata, 3.5-7.5 cm. longa, 2.5-4.5 cm. lata, acuta vel acuminata, basi profunde cordata, sinu lato aperto 5-15 mm. longo rotundato, lobis basalibus rotundatis et paullo incurvis, supra viridis, sparse breviterque pilosa, subtus pallidior, praesertim ad nervos breviter pilosa; cymae umbelliformes pauciflorae 2-3 mm. tantum longe pedunculatae, pedicellis crassiusculis plerumque 3-4 mm. longis pilosulis

vel glabratis; sepala oblongo-lanceolata 6 mm. longa 2 mm. lata, pallida, acuminata, sparse minuteque pilosula vel glabrata, venulosa; corolla late campanulata c. 22 mm. lata et 12 mm. longa, extus sparse et minute pilosula, intus ubique arcte nigro-reticulata et glabra, lobis late triangularibus acuminatis; coronae squamae 4 mm. longae, anguste oblongae, apice dilatatae et rotundatae.—Yucatan: Without locality, *G. F. Gaumer 933* (Herb. Field Mus. No. 37,281, type). Progreso, *Gaumer 1173*. Buena Vista Xbac, *Gaumer 1173*. Chichankanab, *Gaumer 1544*.

The vernacular name is reported as "xbockin" and "boochin." The material has been referred to *D. ceratopetalus* Donn. Smith, a plant with much larger corollas. The flowers of *D. yucatanensis* are much like those of *D. parviflorus* Hemsl., but the latter is a low plant with short petioles and with much denser pubescence.

Dictyanthus brachistanthus, sp. nov.—Volubilis, ut videtur herbacea, caulibus gracilibus sparse puberulis viridibus, internodiis elongatis; folia longe petiolata, petiolo plerumque 2-2.5 cm. longo minute puberulo et sparse hirtello vel glabrato; lamina membranacea, ovata vel deltoideo-ovata, 3.5-8 cm. longa, 2-4 cm. lata, subabrupte acuminata, acumine attenuato acuto angusto, basi rotundata vel truncata, rarius subcordata, supra viridis, pilis brevibus patentibus pallidis pilosula et plus minusve scaberula, subtus pallida, dense hispidula et glanduloso-puberula; cymae umbelliformes dense pauciflorae 0.7-3 cm. longe pedunculatae, pedunculo minute puberulo, pedicellis validiusculis plerumque 3-7 mm. longis minute puberulis et hispidulis; sepala anguste lanceolata 6-7 mm. longa attenuata erecta minute puberula; corolla latissime campanulata, glabra, c. 12 mm. lata et 6 mm. longa, intus ubique minute venulis nigrescentibus reticulato-venulosa, lobis late triangularibus acuminatis; coronae squamae anguste obovatae 2 mm. longae apice rotundatae.—Guatemala: Atitlán, Dept. Sololá, alt. 600 m., February, 1894, *Heyde & Lux 6346* (Herb. Field Mus. No. 76,787, type).

The type collection was distributed as *D. parviflorus* Hemsl., but it represents a plant quite unlike that Mexican species. *D. brachistanthus* is related to *D. yucatanensis*, but in that the leaves are deeply cordate at the base, the stems are hirsute, and the appendages of the corona much more developed.

CONVOLVULACEAE

Maripa nicaraguensis Hemsl. Biol. Centr. Amer. Bot. 2: 382. 1882.

Although this species is rather common along some parts of the Atlantic coast of Central America, the following collection shows that its range extends much farther northward than had been

known previously: British Honduras: Middlesex, in jungle, alt. 60 m., August, 1929, *W. A. Schipp S.14*. The specimens are in fruit only.

***Ipomoea Mitchellae*, sp. nov.**—Herba alte scandens, caulibus sparse pilis longis patentibus saepe deciduis hirsutis; folia longe petiolata membranacea, lamina ovata vel late ovata, 5.5-9.5 cm. longa, 3-7 cm. lata, integra, longe et interdum abrupte acuminata, basi profunde cordata, sinu lato 1-1.5 cm. longo, lobis basalibus late rotundatis, supra viridi, subtus paullo pallidior et plus minusve albido-puncticulata, petiolis plerumque sparse hirsutis; flores cymosi, cymis 2.5-4.5 cm. longe pedunculatis, pedunculis glabris paucifloris, pedicellis plerumque 6-10 mm. longis glabris, bracteis foliaceis linearibus vel lanceolatis, 0.6-2 cm. longis, attenuatis, glabris; sepala foliacea lanceolato-oblonga 12-20 mm. longa attenuato-acuminata et apice filiformi-producta, supra glabra, prope basin dense hirsuta; corolla infundibuliformis purpurea glabra, 7 cm. longa, tubo crasso fauce 1.5 cm. lato; capsula (immatura?) ovoidea obtusa 9 mm. longa glabra 3-locularis, seminibus dense pubescentibus 5 mm. longis.—Honduras: Wet thicket, La Fragua, Dept. Atlántida, alt. 20 m., December 7, 1927, *Paul C. Standley 52658* (Herb. Field Mus. No. 582,849, type). Near Progreso, Dept. Yoro, wet thicket, *Standley 54994*. Quebrada Seca, Dept. Yoro, wet thicket, *Standley 53894*. Near Tela, Dept. Atlántida, *Elizabeth R. Mitchell 54*; in banana plantation, *Mitchell 134*.

It is with considerable reluctance that I propose a new species in this already complicated group of the genus *Ipomoea*, whose members are so imperfectly known and so badly in need of critical revision. The present plant, however, I have been quite unable to refer satisfactorily to any of the described species. It is related evidently to *I. purpurea* (L.) Lam., which usually has pubescent leaves and glabrous seeds. It differs from *I. Meyeri* (Spreng.) Don in its shorter sepals and larger corolla.

VERBENACEAE

***Citharexylum teclense*, sp. nov.**—Arbor, ramulis acute tetragonis, vetustioribus ochraceis vel brunnescentibus, junioribus dense puberulis, internodiis brevibus vel elongatis; folia opposita petiolata, petiolo 4-8 mm. longo crassiusculo dense puberulo; lamina subcoriacea, elliptica vel obovato-elliptica vel rarius rotundato-obovata, 8-12.5 cm. longa, 3.5-6.5 cm. lata, abrupte acuta vel interdum tantum acutiuscula, basi cuneato-acuta vel longe angustata, supra viridis, scabra, nervis subimpressis, subtus undique pilis minutis rigidiusculis patentibus albidis molliter hirtella, costa gracili elevata, nervis lateralibus utroque latere c. 7, gracilibus, prominentibus, arcuatis, angulo acuto adscendentibus, prope marginem arcuato-conjunctis, nervulis prominulis reticulatis; flores spicati, spicis

sessilibus vel breviter pedunculatis 3.5-11 cm. longis remote paucifloris, rhachi dense minuteque puberula, bracteis lineari-lanceolatis 1.5-2 mm. longis attenuatis minute puberulis; calyx campanulatus 5-6 mm. longus, 4 mm. latus, obsolete dentatus, dentibus latissime rotundatis apiculatis, minutissime puberulus; corolla extus glabra, tubo crasso 7-8 mm. longo, lobis oblongis 3-3.5 mm. longis crassis apice rotundatis vel retusis; drupae subglobosae 12-14 mm. longae.—Salvador: Finca La Joya, near Santa Tecla, June 4, 1929, *Salvador Calderón 2529* (Herb. Field Mus. No. 592,032, type). Puerta de la Laguna, cultivated, June, 1928, *Calderón 2354*.

Called "café de árbol," presumably because the fruits suggest those of coffee. The species is an isolated one, not closely similar to any other with which I am familiar.

Citharexylum Pringlei Greenm. Proc. Amer. Acad. 41: 243. 1905. *Ligustrum spicatum* Jacques, Rev. Hort. 1863: 339. 1863. *C. spicatum* Sprague, Kew Bull. 1924: 146. 1924, not Rusby, 1900.

Sprague published in 1924 (Kew Bull., 145) a detailed account of the rather extensive synonymy of this Mexican species, and came to the conclusion that its proper name was *Citharexylum spicatum* (Jacques) Sprague. In making this new combination, however, he overlooked the fact that a *Citharexylum spicatum* had been published by Rusby in 1900 (Bull. Torrey Club 27: 81). I have not seen material of Rusby's species, but at least until it has been proved to be a synonym, the specific name *spicatum* can not be used for the Mexican plant, and the latter should, therefore, be known as *Citharexylum Pringlei* Greenm.

LABIATAE

Salvia comayaguana, sp. nov.—Herba erecta 1-1.5 m. alta, ramis densissime breviterque villosis obtuse quadrangularibus validis, internodiis elongatis; folia opposita petiolata crasse membranacea, petiolo 1-4 cm. longo dense breviterque villosa, foliorum supremorum brevissimo; lamina ovata, late ovata vel elliptico-ovata, 6-17 cm. longa, 3-8 cm. lata, acuta vel acuminata, basi obtusa vel rotundata et plerumque abrupte breviterque decurrens, arcte serrata vel crenato-serrata, supra viridis, subdense adpresso-villosula vel interdum fere scabra, ad nervos densius villosula, costa nervisque prominulis, subtus pallidior, ubique dense atque molliter breviterque villosa-pilosa, pilis griseis, costa nervisque prominentibus, nervis lateralibus utroque latere 4-6 arcuatis; flores verticillati, verticillis plerumque 6-8-floris, inferioribus 1.5-3.5 cm. distantibus, in racemum spiciformem 10-19 cm. longum et 2 cm. latum terminalem erectum dispositis, pedicellis 2-3 mm. longis pilosis, bracteis deciduis lanceolato-ovatis 10-12 mm. longis longe subulato-acuminatis dense albido-pilosis; calyx 9 mm. longus dense pilis rigidiusculis albidis villosulo-pilosus, supra paullo dilatatus, laciniis tubo brevioribus

anguste triangularibus longe subulato-acuminatis; corolla purpureo-rubra 18 mm. longa, tubo extus glabro 1 cm. longo superne vix dilatato cylindrico, labio superiore lato extus dense villosulo, inferiore subaequali extus sparse villosulo; stamina non exserta.—Honduras: Moist thicket near Siguatopeque, Dept. Comayagua, alt. 1,100 m., February, 1928, *Paul C. Standley 55842* (Herb. Field Mus. No. 581,412, type), 55916.

In the form of the inflorescence and calyx and in pubescence this plant somewhat resembles *S. Lindenii* Benth., but the latter has cordate leaves and a very different corolla.

Salvia Fernaldii, sp. nov.—Herba ut videtur perennis, caulibus erectis vel adscendentibus ramosis 20-50 cm. longis gracilibus viridibus obtuse tetragonis glabris vel plerumque minute puberulis vel pilis sparsis longis albidis patentibus pilosis, internodiis elongatis; folia opposita longe petiolata, petiolo plerumque 6-10 mm. longo incurvo-puberulo vel glabrato; lamina membranacea, deltoidea vel deltoideo-ovata, 1-2 cm. longa, 0.7-1.7 cm. lata, obtusa vel acutiuscula, basi truncata, interdum abrupte breviterque decurrens, crenata, dentibus utroque latere c. 7, utrinque sparse scaberula, subtus paullo pallidior; flores verticillati, verticillis paucifloris remotis racemos 2-15 cm. longos fere nudos efformantibus, bracteis parvis lanceolatis pedicellis plerumque brevioribus, pedicellis adscendentibus dense puberulis 2.5-3.5 mm. longis; calyx maturus anguste campanulatus 5-6 mm. longus costatus, sparse puberulus vel scaberulus, rarius glabratus, saepe pilis paucis longioribus eglandulosis albidis patentibus indutus, lobis tubo brevioribus subaequalibus ovatis acutis erectis minutissime ciliolatis; corolla 8-9 mm. longa extus sparse puberula, tubo calyci aequali fauce paullo dilatato.—Yucatan: Chichen Itzá, February 27-28, 1899, *C. F. Millspaugh 1634* (Herb. Field Mus. No. 61, 634, type). Izamal, in 1888, *Gaumer*. Pocoboch, *Gaumer 1333*. Kancabtsontot, *Gaumer 23519*. Buena Vista, *Gaumer* in 1899.

The specimens have been referred to *S. micrantha* Vahl and *S. serotina* Sw., and the species is undoubtedly related to *S. micrantha*. In that, however, the calyx is copiously glandular-pubescent, while in this Yucatan plant there is no trace of gland-tipped hairs about the inflorescence.

The species is named for Professor M. L. Fernald, as a mark of appreciation of his excellent monograph of the Mexican species of *Salvia*, which has proved invaluable to all students of the Mexican flora.

Micromeria Brownei (Sw.) Benth.—To the synonymy of this widespread tropical weed must be added the following: *Hedeoma gracillima* Jones, Contr. West. Bot. 15: 150. 1929.

SOLANACEAE

Physalis mayana, sp. nov.—Suffrutex, ramis validis teretibus et obscure angulatis ochraceis dense stellato-tomentosis; folia solitaria, petiolo 0.6-2 cm. longo supra et saepe fere ad basin alato, e lamina non plane distincto; lamina late ovata vel rhombico-ovata, 6-15 cm. longa, 3.5-9 cm. lata, acuta vel breviter acuminata, versus basin abrupte angustata, longiattenuata et ad petiolum decurrens, undulata vel irregulariter, grosse et obtuse sinuato-dentata, saepe integra vel subintegra, tenuis, supra viridis, stellato-puberula, subtus paullo pallidior, dense molliterque stellato-tomentosa; flores in axillis fasciculati, pedicellis gracilibus in anthesi 7-13 mm. longis stellato-tomentosis; calyx campanulatus 6-7 mm. longus, 5-6 mm. latus, stellato-pubescent, lobis triangularibus tubo paullo brevioribus; corolla campanulata 12 mm. longa et fere aequilata, lobis ovato-triangularibus obtusis tubo subaequilongis, extus breviter villosis; antherae 4 mm. longae, 1.5 mm. latae, obtusae, erectae, glabrae, rimis lateralibus dehiscentes; calyx fructiferus accrescens et inflatus, late ovoideus, 3 cm. longus et plus quam 2 cm. latus, apice contractus et fere clausus, basi late rotundatus vel concavus, tenuis, pilis plerumque stellatis minute pubescens; bacca sessilis globosa glabra 1 cm. diam.; semina numerosa compressa 1.5 mm. longa pallide brunnescentia grosse reticulata.—Yucatan: Without definite locality, in 1917-21, *G. F. Gaumer 24381* (Herb. Field Mus. No. 552,374, type). Chichankanab, *Gaumer 1504*. San Felipe, *Gaumer 1421*. Without definite locality, *Gaumer 1000*.

This plant is related to *P. melanocystis* (Robinson) Bitter, but that species differs in its small narrow leaves, simple pubescence, and smaller fruiting calyces.

Solanum Lundellii, sp. nov.—Frutex inermis, ramulis gracilibus teretibus densissime stellato-hispidulis, internodiis 1-3.5 cm. longis; folia solitaria, breviter petiolata, petiolo gracili 4-6 mm. longo dense stellato-hispidulo; lamina membranacea ovato-oblonga vel lanceolato-oblonga, 5-11 cm. longa, 2-4.5 cm. lata, subabrupte longiacuminata, acumine angusto attenuato acuto, basi obliqua, latere interiore cuneato-acuta, exteriori rotundata, utrinque subdense stellato-pilosula, pilis simplicibus intermixtis, integra, supra viridis, nervis vix prominulis, subtus paullo pallidior, nervis lateralibus utroque latere c. 6, angulo acuto adscendentibus, arcuatis, remote a margine conjunctis; flores ad axillas fasciculati, numerosi, pedicellis gracilibus 5-15 mm. longis dense molliterque pilis ochraceis stellato-pilosis; calyx fere ad basin 5-fidus, laciniis oblongis vel late oblongis 5-6 mm. longis apice obtusis vel rotundatis, extus dense stellato-pilosulis; cetera ignota.—British Honduras: Roaring Creek, August, 1929, *C. L. Lundell 324* (Herb. Field Mus. No. 602,915, type).

A relative of *S. extensum* Bitter, a common species of the Canal Zone, Panama.

***Solanum yucatanum*, sp. nov.**—Frutex, ramulis teretibus subdense pilis brevistipitatis pauciramosis ferrugineis indutis, aculeatis, aculeis 7 mm. longis, basi compressis et 5-6 mm. latis, divaricatis vel paullo decurvis, basi pilis paucis stipitatis stellatis indutis, aliter glabris; folia solitaria vel saepe in axillis foliis 1-2 parvis comitata, petiolis 4-10 mm. longis stellato-hispidulis saepe aculeo longo gracili armatis; lamina oblonga vel elliptico-oblonga, 3-6.5 cm. longa, 1.5-3 cm. lata, versus apicem obtusum vel acutiusculum angustata, basi valde inaequalis, utroque latere rotundata vel obtusa sed uno latere 2-5 mm. infra alterum protracta, crassa, aspera, supra viridis, dense stellato-hispidula, subtus pallidior, stellato-tomentosa, pilorum brevistipitatorum ramulis gracillimis longis intertextis, venis subtus prominentibus, costa interdum aculeis 1-2 longis gracilibus rectis armata, nervis lateralibus utroque latere 6-7 arcuatis, marginibus integris; flores hermaphroditi, cymis lateralibus vulgo 2-3-floris, pedunculis usque ad 3 mm. longis stellato-hispidulis inermibus; calyx in anthesi 5-6 mm. longus (in fructu usque ad 15 mm.), inermis vel prope basin aculeis 1-2 gracilibus munitus, fere ad basin 5-lobus, lobis lineari-oblongis vel anguste lanceolato-oblongis, apicem obtusum versus angustatis, utrinque stellato-hirtellis, patentibus; corolla 7 mm. longa fere ad basin lobata, laciniis oblongo-linearibus attenuatis extus sparse stellato-hispidulis; filamenta 2 mm. longa, antheris 4 mm. longis liberis basi cordatis glabris superne angustatis, poris apicalibus; stylus antheris aequilongus; bacca globosa glabra 8 mm. diam.—Yucatan: Bocas de Silám, in 1917-21, *G. F. Gaumer 24352* (Herb. Field Mus. No. 552,358, type). Chichankanab, *Gaumer 2000*.

This is evidently a member of the group which includes *S. laurifolium* Mill. and *S. diversifolium* Schlecht., but it is well marked by the small entire leaves.

GESNERIACEAE

***Corytholoma Warscewiczii* (Bouché & Hanst.), comb. nov.**
Gesnera Warscewiczii Bouché & Hanst. Ind. Sem. Hort. Berol. 1861. App. 9. 1861; *Linnaea* 34: 273. 1865-66.

***Columnea pilosissima*, sp. nov.**—Frutex gracilis epiphyticus sparse ramosus, ramis subteretibus ochraceis dense pilis longis patentibus fulvis vel ochraceis pilosis, internodiis brevibus; folia breviter petiolata tenuiter carnosa, petiolo 2-4 mm. longo gracili piloso; lamina anguste oblonga vel lanceolato-oblonga, 2-3 cm. longa, 6-8 mm. lata, apicem versus paullo angustata, obtusa, basi acuta, integra, utrinque dense pilosa, supra enervia, costa subtus prominula, venis obsolete; flores solitarii sessiles vel subsessiles; sepala sublibera lanceolata attenuata c. 9 mm. longa subaequalia dense pilosa viridia; corolla laete coccinea extus subsparse pilis longis multicellularibus pilosa, 5-6 cm. longa, tubo superne sensim ampliato, fauce 8 mm. lato, limbo bilabiato, labio superiore fere 2 cm. longo concavo obtuso, inferiore 1 cm. longo, laciniis oblongis

attenuatis obtusis; stamina exserta labium superiorem aequantia, antheris oblongis 2.5 mm. longis.—Honduras: On tree in wet forest on the hills high above Lancetilla Valley, Dept. Atlántida, alt. 600 m., March 13, 1928, *Paul C. Standley 56789* (Herb. Field Mus. No. 581,792, type). Also Nos. 54176 and 55614 (both sterile) from the same region.

The Columnneas are among the very handsomest of all the plants of Central America, but most of the species of the region are confined to the mountains of Costa Rica and Panama. Only a few extend to northern Central America and Mexico, and the present plant seems to be an isolated species, somewhat noteworthy because of its occurrence at such a low elevation.

ACANTHACEAE

Ruellia longipila, sp. nov.—Herbacea, ramulis gracilibus subteretibus pilis longis albis vel fulvescentibus mollibus patentibus satis dense pilosis, internodiis brevibus vel elongatis; folia longe petiolata membranacea, petiolo gracili 7-14 mm. longo longipiloso; lamina lanceolato-oblonga, 4.5-9.5 cm. longa, 1.5-3.3 cm. lata, acuta vel acuminata, basi acuta vel subobtusa, supra viridis, in sicco fusca, pilis longis multicellularibus albis pilosa, subtus pilis similibus densius pilosa, supra raphidibus brevibus minutis pallidis dense conspersa, costa subtus prominente gracili, nervis lateralibus utroque latere c. 8; flores axillares solitarii, sessiles vel brevissime pedicellati; calycis laciniae lineares 1.5 cm. longae virides albo-pilosae; corolla purpurascens extus albido-puberula, tubo gracillimo 17 mm. longo, 1.5 mm. crasso, fauce abrupte dilatata, tubo aequilonga, ore 8 mm. lata, lobis rotundatis inaequalibus, superioribus 8 mm. longis, inferioribus paulo longioribus; antherae oblongo-lineares 3 mm. longae; capsula oblonga glabra 12 mm. longa, abrupte breviterque acuminata, basi non contracta.—British Honduras: Stann Creek District, common in high bush ground, in 1929, *C. L. Stocker 20* (Herb. Field Mus. No. 597,929, type). Roaring Creek, August, 1929, *C. L. Lundell 322*.

Noteworthy for the dense and unusually long, white pubescence.

Jacobinia leucothamna, sp. nov.—Frutex 2-metralis, ramis crassiusculis teretibus ochraceis vel albidis, novellis dense pilis pallidis adpresso-pilosis, internodiis brevibus vel elongatis; folia breviter petiolata subcoriacea, petiolo crassiusculo 2-4 mm. longo hirtello vel puberulo; lamina late elliptica vel rarius oblongo-elliptica 2-4.5 cm. longa, 1.7-3.3 cm. lata, apice rotundata et apiculata vel interdum obtusa, basi rotundata vel obtusa, interdum abrupte breviterque contracta, supra viridis, sparse hinc inde pilis minutis albidis pilosula vel glabrata, interdum scaberula, subtus ubique dense velutino-pilosula, costa gracili elevata, nervis lateralibus utroque latere c. 7, angulo lato adscendentibus, prominulis, gracilimis, valde arcuatis, juxta marginem conjunctis; flores spicati,

spicis ex axillis supremis ortis simplicibus vel furcatis, laxe paucifloris, breviter pedunculatis, 1-2 cm. longis, rhache pilosula, bracteis subulatis hispidulis c. 1.5 mm. longis; sepala lanceolato-subulata 2.5 mm. longa attenuata erecta pilosula; corolla alba 8-9 mm. longa extus pilosa, tubo anguste infundibuliformi, superne paullo dilatato, limbo bilabiato tubo brevior; antherae loculi oblongi 1 mm. longi inaequaliter inserti, basi obtusi.—Yucatan: Silám, G. F. Gaumer 1242 (Herb. Field Mus. No. 57,171, type), 2280.

Jacobinia ensiflora, sp. nov.—Frutex metralis, trunco 2.5 cm. diam., ramulis gracilibus subteretibus glabris, internodiis elongatis; folia petiolata, petiolo gracili 1.8-3.5 cm. longo glabro; lamina membranacea, anguste lanceolato-oblonga, 19-20 cm. longa, 5-5.5 cm. lata, longe et abrupte sensimve acuminata, acumine angusto attenuato, basin versus longe angustata, integra vel obscure undulata, glabra, supra viridis, sublucida, costa nervisque prominulis, subtus paullo pallidior, costa gracili elevata, nervis lateralibus utroque latere c. 7, gracillimis, angulo acutissimo adscendentibus, subarcuatis, marginem fere attingentibus; inflorescentia terminalis longissime graciliterque pedunculata, dense cymoso-paniculata, multiflora, corollis neglectis c. 4 cm. longa, pedunculo 16 cm. longo dense minuteque patenti-piloso, ramis brevibus dense glanduloso-pilosulis, bracteis oblongis vel late linearibus acutis dense glanduloso-pilosulis calyce duplo brevioribus; sepala erecta anguste linearia longe sensimque attenuata, dense glanduloso-pilosula; corolla laete aurantiaca linearis, fere 6.5 cm. longa, extus subdense glanduloso-villosula, tubo crassiusculo 3-3.5 mm. lato, labio superiore fere 3 cm. longo, inferiore brevissimo; stamina 2 inclusa, filamentis gracillimis glabris, antheris lineari-oblongis fere 5 mm. longis, loculis inaequaliter insertis, basi muticis; stylus gracillimus glaber.—British Honduras: Middlesex, in forest, alt. 75 m., October 2, 1929, W. A. Schipp 354 (Herb. Field Mus. No. 603,046, type).

Justicia myriantha, sp. nov.—Herba erecta vel decumbens 20-35 cm. alta multiramosa, caulibus gracilibus teretibus viridibus striatis bifariam incurvo-puberulis, internodiis elongatis; folia longe petiolata subcoriacea, petiolo gracili 0.8-2.5 cm. longo puberulo; lamina rotundato-ovata, interdum elliptico-ovata, 1.5-4 cm. longa, 1-3 cm. lata, obtusa vel acutiuscula, basi rotundata vel obtusa, integra, utrinque dense raphidibus brevibus pallidis conspersa, ad venas puberula vel fere omnino glabra, laete viridis, concolor, costa subtus elevata crassiuscula, nervis lateralibus utroque latere 5-6 angulo acuto adscendentibus arcuatis; flores in spicas graciles subrigidas remote paucifloras dispositi, spicis plerumque 5-13 cm. longis paniculatis vel ad axillas fasciculatis, rhache glanduloso-pilosula, bracteis rigidis subulatis viridibus attenuatis c. 2 mm. longis adpressis glanduloso-puberulis; sepala 2.5-3 mm. longa lineari-subulata erecta viridia glanduloso-puberula; corolla c. 5 mm. longa extus glabra, tubo supra vix dilatato, lobis obovatis apice obtusis vel rotundatis tubo paullo longioribus; antherae

c. 0.7 mm. longae, loculis paullo inaequalibus basi breviter mucronatis; capsula 4-5 mm. longa acuminata glabra graciliter 5 mm. longe stipitata; semina 3 mm. longa dense minuteque tuberculata.—Yucatan: Kancabtsonot, in moist soil, January, 1917, *G. F. Gaumer 23557* (Herb. Field Mus. No. 465,924, type). Buena Vista Xbac, *Gaumer 1102*. Lake Chichankanab, April, 1917, *Gaumer 23718*, *23742*.

The generic position of this plant is somewhat uncertain.

***Justicia salvadorensis*, sp. nov.**—Herba perennis decumbens, caulis simplicibus vel pauciramosis, suberectis, gracilibus, subteretibus, puberulis et sparse pilis patentibus pilosis, internodiis elongatis; folia opposita, petiolata, membranacea, petiolo gracili 3-8 mm. longo puberulo et piloso; lamina ovata vel late ovata, 2.5-6.5 cm. longa, 1.5-3 cm. lata, obtusa vel acuta, basi abrupte contracta et anguste decurrens, supra viridis, sparse hispidula vel fere glabra, densissime rhaphidibus linearibus minutis pallidis conspersa, subtus pallidior, ad nervos sparse hispidula, rhaphidibus dense notata, costa gracili elevata, nervis lateralibus utroque latere c. 5, gracilibus, arcuatis, prominentibus, angulo acuto adscendentibus, prope marginem conjunctis; flores spicati, spicis terminalibus 4-10 cm. longis breviter pedunculatis, remote paucifloris, rhachi gracili erecta pilis brevibus hispidula; bracteae erectae virides lineari-subulatae 6-8 mm. longae hispidulae; calyx fere ad basin 4-fidus, laciniis lineari-subulatis hispidulis 5 mm. longis; corolla in alabastro calyce dimidio brevior, puberula.—Salvador: Hacienda El Platanar, Suchitoto, in 1928, *Salvador Calderón 2418* (Herb. Field Mus. No. 580,407, type).

***Pseuderanthemum nanum*, sp. nov.**—Herba perennis 5-17 cm. alta, basi plus minusve fruticosa, radice crassa lignosa, caule simplici vel pauciramoso albido lucido minute puberulo, internodiis brevibus; folia coriacea petiolata, petiolo crassiusculo 3-7 mm. longo minute puberulo; lamina ovata vel ovato-elliptica, 2-5 cm. longa, 1-2.5 cm. lata, versus apicem plus minusve angustata, obtusa vel subrotundata, basi obtusa vel interdum abrupte contracta et decurrens, lucida, integra, glabra, supra viridis, ut videtur in vivo pallide picta, costa nervisque non elevatis, margine cartilagineo-incrassato, subtus pallidior, costa crassiuscula elevata, nervis lateralibus utroque latere c. 4 obscuris, nervulis obsoletis; flores spicati, spicis terminalibus simplicibus solitariis vel geminatis, 2-5 cm. longis, sessilibus vel breviter pedunculatis, dense multifloris, bracteis subulatis c. 6 mm. longis rigidis erectis nervulosis puberulis imbricatis; sepala 9 mm. longa subulato-attenuata minute puberula rigida erecta; corollae tubus gracilis c. 8 mm. longus superne vix dilatatus, glaber, lobis subaequalibus late patentibus obovatis apice obtusis vel rotundatis glabris tubum aequantibus; antherae inclusae.—Yucatan: Silám, *G. F. Gaumer 1305* (Herb. Field Mus. No. 57,234, type). Progreso, *Gaumer 2295*.

Drejerella longipes, sp. nov.—Herba erecta 20-30 cm. alta ramosa, ramis subteretibus ochraceis vel albidis subgracilibus densissime pilis brevibus patentibus mollibus plus minusve viscidis pilosis, internodiis brevibus vel elongatis; folia longissime petiolata, petiolo 1-2.2 cm. longo gracillimo dense viscido-piloso; lamina membranacea rotundato-ovata, 7-17 mm. longa, 8-14 mm. lata, acuta vel subobtusa, basi late rotundata, integra, laete viridis, utrinque dense viscido-pilosula, basi trinervia; flores in spicas densas foliaceo-bracteatas c. 1.5 cm. longas et fere aequilatas dispositi, bracteis foliis conformibus sed brevius petiolulatis, petiolulo c. 3 mm. longo, lamina c. 5 mm. longa, obtusa vel acuta, apiculata, densissime molliterque pilosula; sepala lineari-subulata 4 mm. longa viridia attenuata dense pilosa; corolla ut videtur alba 11 mm. longa, extus glabra, tubo gracili 6 mm. longo et 1 mm. crasso, lobis subaequalibus tubum aequantibus, apice obtusis vel rotundatis; antherae subexsertae, loculis c. 1 mm. longis paullo inaequalibus.—Yucatan: Chichen Itzá, February 27-28, 1899, C. F. Millspaugh 1621 (Herb. Field Mus. No. 437,703, type). Buena Vista, in 1899, Gaumer.

In general appearance the plant suggests *Drejerella origanoides* (Nees) Lindau, of Cuba. It is noteworthy for the very small leaf blades, nearly uniform in size, borne on very long, slender petioles.

Glockeria Moralesii, sp. nov.—Rami herbacei graciles teretes virides, pilis gracilibus brevibus albidis sparse villosuli et supra glanduloso-pilosuli, internodiis elongatis; folia opposita longe petiolata membranacea, petiolo gracili 1.5-4.5 cm. longo villosulo; lamina ovata 6-13 cm. longa et 2.5-6 cm. lata et ultra, longe angustaque acuminata, basi acuta vel abrupte contracta et decurrens, supra viridis, sparse villosula, subtus paullo pallidior, praesertim ad nervos villosulo-pilosula; inflorescentia terminalis thyrsideo-paniculata laxissime multiflora, 20-27 cm. longa, c. 12 cm. lata, longipedunculata, ramis primariis divaricatis repetite dichotomis glanduloso-villosulis gracilibus, floribus in cymas parvas laxas dispositis graciliter pedicellatis, pedicellis 2-5 mm. longis, bracteis viridibus anguste triangularibus plerumque 1 mm. longis; calyx 5-fidus, laciniis fere distinctis 3.5-4 mm. longis linearibus viridibus glanduloso-puberulis attenuatis; corolla ut videtur rubra, 12 mm. longa, extus glabra, tubo brevissimo c. 2 mm. longo, fauce elongata 3 mm. lata cylindracea paullo curvata, limbo bilabiato, labio postico angusto suberecto 3 mm. longo, antico trilobo, lobis vix 2 mm. longis rotundatis; stamina fere 1 cm. longe exserta, filamentis gracillimis glabris, antheris oblongis 3 mm. longis obtusis; stylus staminibus longior; capsula glabra 14 mm. longa, abrupte contracta et longe stipitata, acuta; semina 4, suborbicularia, dense longeque verruculosa.—Guatemala: San Martín, Dept. Chimaltenango, alt. 1,800 m., November, 1928, *Jesús Morales R.1237* (Herb. Field Mus. No. 599,978, type).

Vernacular name, "coqueta."

BIGNONIACEAE

Arrabidaea belizensis, sp. nov.—Frutex alte scandens, trunco 7.5 cm. diam., ramulis gracilibus subteretibus vel ad nodos paullo compressis et dilatatis, glabris, internodiis elongatis; folia bifoliolata petiolata, petiolulis gracilibus 2-3 cm. longis teretibus glabris; foliola chartacea late elliptica, ovali-elliptica vel late ovato-elliptica, 4.5-12 cm. longa, 3-7 cm. lata, abrupte breviterque acuminata, acumine triangulari obtuso vix 1 cm. longo, basi rotundata vel subtruncata et saepe abrupte breviterque decurrens, supra glabra, costa nervisque prominulis, subtus ad costam nervosque sparse fulvo-pilosa, ad axillas plus minusve barbata, costa gracili elevata, nervis lateralibus utroque latere c. 4, angulo acuto adscendentibus, nervulis utrinque prominulis reticulatis; inflorescentia ut videtur cymoso-paniculata, floribus longe pedicellatis; calyx anguste campanulatus 2 cm. longus, ore 1 cm. latus, glaber vel glabratus, breviter bilabiatus, lobis c. 8 mm. longis obtusis; corolla purpurea extus sparse puberula, c. 5 cm. longa; ovarium oblongum glabrum 4 mm. longum.—British Honduras: Middlesex, in jungle, alt. 60 m., July 4, 1929, *W. A. Schipp 284* (Herb. Field Mus. No. 598,217, type).

The available material is in poor condition for study, and the proper generic position of the plant is somewhat uncertain.

Arrabidaea Lundellii, sp. nov.—Frutex alte scandens, trunco usque ad 15 cm. diam., ramulis gracilibus teretibus rimosis dense et minutissime puberulis, internodiis elongatis; folia bifoliolata 12-18 mm. longe petiolata, petiolo tereti minute puberulo, petiolulis c. 1 cm. longis gracilibus; foliola elliptico-ovata 6.5-9.5 cm. longa, 3.5-5 cm. lata, obtusa vel subacuminata, acumine brevi obtuso, basi rotundata, crasse membranacea, supra viridia, dense minuteque puberula, costa nervisque vix elevatis, subtus pallida, ubique tomento minutissimo ochraceo vel albido densissime oblecta, costa nervisque gracilibus elevatis, nervulis prominulis laxè reticulatis; inflorescentia terminalis cymoso-paniculata 7-12 cm. longa, basi interdum foliaceo-bracteata, dense multiflora, ramis dense minuteque puberulis, pedicellis plerumque 4-5 mm. longis; calyx campanulatus 3.5-4.5 mm. longus et fere aequilatus, tomento minutissimo dense indutus, truncatus, dentibus obsoletis; corolla 2.5 cm. longa extus sparse minuteque puberula, tubo 4-5 mm. longo, fauce abrupte ampliata ore 1 cm. lata, lobis paullo inaequalibus late rotundato-obovatis c. 8 mm. longis apice late rotundatis; ovarium minutissime puberulum oblongum, stylo filiformi glabro c. 12 mm. longo.—British Honduras: Honey Camp, Orange Walk, October, 1928, *C. L. Lundell 56* (Herb. Field Mus. No. 580,856, type).

Called "tie-tie." Growing to the tops of the highest trees.

The dense and very minute, pale tomentum of the lower leaf surface is distinctive.

Adenocalymna heterophyllum, sp. nov.—Frutex scandens, ramis subteretibus ochraceis vel brunnescentibus lenticellis magnis pallidis elevatis conspersis, novellis gracillimis sparse et minutissime lepidotis cito glabratis, internodiis plerumque valde elongatis; folia plerumque trifoliolata 2.5-5.5 cm. longe petiolata, petiolo gracili tereti sparse minuteque lepidoto, petiolulis 5-18 mm. longis; foliola crasse membranacea elliptica, late elliptica vel interdum obovato-elliptica, 4-8.5 cm. longa, 2.5-5 cm. lata, apice abrupte acuta vel saepe rotundata vel profunde emarginata, basi obtusa, rotundata vel subacuta et vulgo plus minusve inaequalia, utrinque glabra vel in statu juvenili sparse et minutissime lepidota, costa nervisque supra prominulis, subtus prominentibus, nervulia utrinque prominulis et arcte reticulatis; flores in racemos terminales breves sessiles vel breviter pedunculatos pauci- vel multifloros dispositi, pedicellis dense minuteque lepidotis c. 1 cm. longis; calyx campanulatus truncatus 7-8 mm. longus, ore 6-7 mm. latus, basi obtusus vel rotundatus, minutissime lepidotus, margine tenui minute ciliolato; corolla 6-7.5 cm. longa in alabastro acutiuscula, extus ubique dense villosulo-tomentosa, tubo crasso basi 4-5 mm. lato, superne sensim dilatato, fauce 1.5 cm. lato, lobis rotundatis subaequalibus 12-15 mm. longis; stylus gracilis glaber 3 cm. longus; discus annularis c. 1.5 mm. altus.—Yucatan: Kancabtsonot, May, 1917, *G. F. Gaumer 23889* (Herb. Field Mus. No. 466,372, type). Without locality, *Gaumer 1098*.

The second collection cited has been reported from Yucatan (Field Mus. Bot. 1: 390. 1898, in part) as *Bignonia aequinoctialis* L. From the other species of *Adenocalymna* known from Yucatan, this is distinguished by its much larger corollas.

Tabebuia speciosa, sp. nov.—Arbor 15-metralis, trunco 7.5 cm. diam., ramulis crassiusculis in sicco brunneis vel fuscis glabris lenticellis elevatis conspersis, internodiis brevibus; folia opposita digitatim 3-foliolata, petiolo 6-8 cm. longo gracili tereti glabro, petiolulis 1.5-3 cm. longis subteretibus; foliola elliptica vel ovato-elliptica 11-14 cm. longa, 5.5-7 cm. lata, subcoriacea, integra, abrupte angustaque acuminata, acumine attenuato obtuso, basi rotundata, utrinque glabra, supra viridis, nervis non elevatis, subtus in sicco brunnescens, costa gracili elevata, nervis lateralibus utroque latere c. 10, gracilibus, prominentibus, angulo acuto adscendentibus, subarcuatis; flores in paniculas laxas paucifloras dispositi (paniculae perfectae non visae), c. 1.5 cm. longe pedicellati, pedicellis gracilibus glabris; calyx spathaceus 2.5-2.8 cm. longus, basi late rotundatus, ore oblique et c. 1 cm. profunde fissus, glaber, supra 1 cm. latus et ultra; corolla lutea glabra, tubo 3-4 cm. longo, 1 cm. crasso, lobis subaequalibus rotundatis crenato-undulatis 2 cm. longis.—British Honduras: Middlesex, in jungle, alt. 60 m., September 18, 1929, *W. A. Schipp S.51* (Herb. Field Mus. No. 602,929, type).

It is a surprise to find anywhere in Central America an undescribed *Tabebuia*, and especially so distinct a one as this. The combination of trifoliolate entire glabrous leaves and showy yellow flowers makes the plant quite unlike any of the other species known from the region, and it seems altogether superfluous to compare it in detail with any of them.

RUBIACEAE

Alsels yucatanensis, sp. nov.—Ramuli vetustiores teretes grisei, internodiis brevibus, novellis obtuse tetragonis sparse hirtellis; stipulae triangulares 5 mm. longae cuspidato-acuminatae glabratae caducae; petioli graciles 1-2.5 cm. longi puberuli; lamina obovata, elliptico-obovata vel oblongo-obovata, 8-30 cm. longa, 4-12.5 cm. lata, apice acuminata vel rotundata et subabrupte breviacuminata, versus basin cuneatam longiattenuata, tenuis, supra viridis, glabra vel sparse ad costam pilosa, subtus pallidior, sparse ad nervos setuloso-pilosa vel glabrata, saepe ad axillas barbata, costa valida prominente, nervis lateralibus utroque latere c. 17, gracilibus, rectis sed versus marginem arcuatis; flores sessiles vel brevissime pedicellati, racemis 7-40 cm. longis, aliis simplicibus et axillaribus, aliis in paniculam magnam terminalem dispositis, rhachi dense breviterque pilosa vel puberula; bractee lanceolatae vel subulatae, hypanthio duplo breviores; racemi densi multiflori; hypanthium clavatum hirtellum 3 mm. longum; calycis lobi ovati obtusi fere 2 mm. longi puberuli; corolla late campanulata 2.5 mm. longa extus puberula, limbo obscure remoteque 5-dentato; filamenta longe exserta inferne villosa, superne glabra, antheris oblongis 1.2 mm. longis; stylus corollam aequans, ramulis longissimis recurvis glabris; capsulae recurvae breviter pedicellatae clavatae, 14 mm. longae et 3 mm. crassae, glabratae, sparse verruculosae, brunnescentes, basin versus longiattenuatae; semina compressa 1-2 mm. longa utrinque 2-3 mm. longe appendiculata.—Yucatan: Without definite locality, 1917-21, *G. F. Gaumer* 24247 (Herb. Field Mus. No. 552,253, type), 24394, 24341, 24100, 1043.

Alsels Blackiana Hemsl. of Panama differs from this Yucatan tree in its narrower leaves, simple spikes, and glabrous corolla. *A. yucatanensis* has been reported previously by the writer (Contr. U. S. Nat. Herb. 23: 1359. 1926), but without specific name, since adequate material for description was not then available. It is said to be called "cacao-che."

Elaeagia Karstenii, sp. nov.—Arbor, ramulis validis subangulatis dense hirtellis vel glabris, internodiis brevibus; stipulae deciduae oblongae, interdum versus basin paulo angustatae, apice obtusae vel rotundatae, 1 cm. latae, extus dense hispidulae, intus glabrae; folia opposita breviter petiolata, petiolo c. 2 cm.

longo dense hispidulo vel puberulo; lamina coriacea, late elliptica vel obovato-elliptica, 13-25 cm. longa, 7-15 cm. lata, apice subrotundata et brevissime acuminata, acumine late triangulari 5-10 mm. longo obtuso, supra viridis sublucida, primo praesertim prope costam puberula, cito glabrata, costa nervisque prominulis, subtus pallida, secus nervos breviter pilosula vel glabrata, costa valida elevata, nervis lateralibus utroque latere c. 9, angulo lato adscendentibus, prominentibus, arcuatis, prope marginem conjunctis, nervulis obscuris; inflorescentiae terminales, late paniculatae, magnae, c. 20 cm. longae et 25 cm. latae, e basi multiramosae, laxae multiflorae, ramis basalibus adscendentibus, ceteris divaricatis, dense puberulis vel pilosulis, floribus cymose glomeratis, subsessilibus vel 1-2.5 mm. longe pedicellatis, bracteis minutis late ovatis obtusis; hypanthium late turbinatum 1.2 mm. longum dense puberulum; calyx glaber 1.2 mm. longus brevissime 5-lobus, lobis late rotundatis apiculatis; corolla 3-3.5 mm. longa, fere ad basin 5-fida, laciniis oblongis obtusis, fauce dense albido-barbata; filamenta glabra exserta, antheris ovalibus 1 mm. longis; capsula globosa glabrata 2 mm. longa.—Venezuela: Near Colonia Tovar, 1854-55, *A. Fendler 594* (Gray Herb., type; duplicates in herb. N. Y. Bot. Gard. and herb. Mo. Bot. Gard.).—Colombia (perhaps from Venezuela?): Without locality, *Karsten 67* (W).

A close relative of *E. utilis* (Goudot) Wedd., but in the latter the inflorescence is glabrous.

Ladenbergia Pittieri, sp. nov.—Arbor 3-4-metralis, ramulis crassis teretibus glabris, vetustioribus ochraceis rimosis; stipulae oblongo-ovatae 2.5-3 cm. longae obtusae, virides vel ferrugineae, glabrae, cito deciduae; folia breviter petiolata opposita, petiolo valido 2-4 cm. longo subtereti glabro, supra anguste sulcato; lamina subcoriacea, late elliptica, ovali-ovata vel elliptico-ovalis, 12-26 cm. longa, 7-15 cm. lata, acuta vel obtusa, basi rotundata et vulgo profunde cordata vel subcordata, supra viridis, lucida, glabra, nervis prominulis, subtus pallide viridis, glabra vel in axillis sparse obscureque barbata, costa gracili elevata, nervis lateralibus utroque latere c. 7, angulo acuto adscendentibus, prominentibus, gracilibus, fere rectis, prope marginem arcuato-conjunctis, nervulis vix prominulis arcte reticulatis; inflorescentia terminalis 3-10 cm. longe pedunculata, cymoso-paniculata, dense multiflora, 7-9 cm. longa et ultra, basi trichotoma, ramis suberectis dense adpresso-pilosulis, bracteis inconspicuis triangularibus usque ad 3 mm. longis, floribus sessilibus vel breviter pedicellatis congestis; hypanthium 4-5 mm. longum oblongum minute sericeum; calyx 2.5-3 mm. longus glabratus profunde 5-fidus, laciniis oblongis ciliatis; corolla alba extus minute adpresso-pilosa, tubo gracillimo 25-28 mm. longo, 1.6 mm. crasso, superne vix dilatato, ore 2.5 mm. lato, lobis 5 oblongo-lanceolatis 7-9 mm. longis, superne attenuatis, obtusis, patentibus, intus dense puberulis; antherae inclusae; capsula linearis 3.8-5.5 cm. longa, 4-5 mm. lata, ferruginea, glabrata;

semina numerosa compressa, pallide brunnea, ala adjecta 7-10 mm. longa.—Venezuela: Near La Cuchilla, Trujillo, on the road from Valera to Carora, February 10, 1928, *H. Pittier 12943* (Herb. Field Mus. No. 588,346, type; duplicates in U. S. Nat. Herb. and herb. N. Y. Bot. Gard.). Carvajal, near Valera, Trujillo, November 21, 1922, *Pittier 11002* (W).

It is certainly not desirable to add to the already too large number of species ascribed to the genera *Ladenbergia* and *Cinchona*, most of them forms which can be distinguished with difficulty if at all. It is, however, impossible to refer this Venezuelan tree satisfactorily to any species hitherto described in *Ladenbergia*. It is clearly related to *L. magnifolia* (R. & P.) Klotzsch, but in that the corollas are only half as large as in *L. Pittieri*, and the corolla lobes are of approximately the same length as the tube.

Deppea(?) venezuelensis, sp. nov.—Ramuli vetustiores crassi, subteretes, ochracei, glabrati, rimosi, novellis subcompressis vel obtuse angulatis dense sericeis, internodiis 2.5-3 cm. longis; stipulae liberae 1-1.5 cm. longae, anguste triangulares, longe attenuatae, dense sericeae, persistentes, erectae; folia petiolata, opposita, petiolo gracili 2-3.5 cm. longo supra late sulcato sericeo; lamina membranacea, elliptico-oblonga vel oblanceolato-oblonga, 16-21 cm. longa, 6-9 cm. lata, abrupte sensimve acuminata, acumine angusto acuto, basin versus longe sensimque angustata, supra viridis, praesertim ad nervos pilis gracilibus subadpressis pilosa, costa et nervis vix prominulis, nervulis prominulis et arcte reticulatis, subtus paullo pallidior, ubique sparse, ad nervos densius, sericea, costa gracili elevata, nervis lateralibus utroque latere c. 15, gracilibus, prominentibus, subarcuatis, in marginem desinentibus, nervulis prominentibus arcte reticulatis; inflorescentiae axillares, cymosae, fasciculatae, 5-9 mm. longe pedunculatae, laxae pauciflorae, floribus pedicellatis, pedicellis 3-5 mm. longis dense sericeis, bracteis oblongis linearibusve 3-6 mm. longis sericeis; calyx ad apicem capsulae persistens, fere ad basin 5-fidus, laciniis spathulatis vel lineari-oblongis 5-6 mm. longis inaequalibus acutis viridibus, adscendentibus vel subpatentibus, utrinque sericeis; discus annularis crassus; capsula semiglobosa, 2-3 mm. longa, conspicue 5-costata, dense sericea, apice truncata, 2-locularis, placentis septo affixis; semina numerosissima, globosa, 0.4 mm. diam., foveolata.—Venezuela: Without locality, in 1842-43, Funcke 793 (Herb. Kew., type).

I feel confident that this plant does not belong to the genus *Deppea*, a group unknown heretofore south of Panama, but the form of the fruit and seeds and the axillary inflorescence seem to indicate its relationship to this genus. It has been impossible to discover a more satisfactory place for it, but it is probable that

the flowers, when available, will show that the plant represents a new generic type.

Chimarrhis Pittieri, sp. nov.—Arbor magna, ramulis crassis, vetustioribus rimosis, novellis puberulis vel glabratiss saepe subcompressis; stipulae deciduae (perfectae non visae), extus adpressopilosae, intus glabrae; folia breviter petiolata opposita, petiolo 1-2 cm. longo strigilloso supra late sulcato; lamina oblongo-obovata vel late obovata, 14-32 cm. longa, 6.5-17 cm. lata, subcoriacea, abrupte breviterque acuminata, acumine anguste triangulari 1-1.5 cm. longo attenuato, basin versus sensim angustata vel interdum abrupte contracta et decurrens, supra viridis glabra, nervis prominulis, subtus fere concolor, ubique minute sed ad nervos densius strigillosa, costa valida elevata, nervis lateralibus utroque latere c. 15, angulo acuto adscendentibus, prominentibus, gracilibus, fere rectis, prope marginem arcuato-conjunctis, nervulis prominulis arcte reticulatis; inflorescentiae terminales vel ex axillis supremis nascentes, sessiles vel breviter pedunculatae, e basi ramosae, dense multiflorae, basi foliaceo-bracteatae, bracteis superioribus quoque interdum foliaceis, ramis rigidis validis angulo lato adscendentibus compressis angulatisque, dense strigillosae, bracteis paucis plerumque 1-2 mm. longis triangularibus acutis, floribus densissime cymoso-glomeratis sessilibus vel breviter pedicellatis; capsula late obovoidea 3.5-4 mm. longa, basi acutiuscula, dense strigillosa, striato-costata, septicide bivalvis, epicarpio a endocarpio secedente; calyx 1.5 mm. longus cupularis, brevissime lobatus, extus minute strigillosus, persistens. Venezuela: Without definite locality, in 1925, *H. Pittier 11954* (U. S. Nat. Herb. No. 1,281,421, type; duplicate in herb. N. Y. Bot. Gard.). Quebrada de los Hermanos near Macuto, Quebrada del Río de la Guayra, etc., April, 1854, *Birschel* (Herb. Kew.).

According to Birschel, the leaves are sometimes 30-45 cm. long. Pittier gives the vernacular name as "lengua de vaca," doubtless an allusion to the shape of the leaves. From *C. cymosa* Jacq. the present species differs in the much larger capsules and densely glomerate flowers, and in not having tufts of hairs beneath in the axils of the leaves.

The species is easily distinguished from others occurring in Venezuela and Colombia by the dense congested inflorescence. The leaves of the specimens cited exhibit unusual variation in size and in amount of pubescence.

Hoffmannia apodantha, sp. nov.—Frutex 1-3-metralis ramosus, ramulis gracilibus vel validis, sparse breviterque villosis vel glabratiss, obtuse tetragonis, vetustioribus ochraceis, internodiis elongatis; stipulae anguste oblongae, 4-6 mm. longae, deciduae, obtusae, extus ferrugineo-villosulae; folia opposita, petiolo gracili

1-4 cm. longo sparse ferrugineo-villosulo vel glabrato; lamina elliptico-oblonga vel elliptica, 7.5-22 cm. longa, 3-10 cm. lata, acuta vel acuminata, acumine anguste triangulari obtuso vel acuto, basin versus angustata et sensim decurrens, membranacea, supra viridis, glabra, raphidibus minutis pallidis dense conspersa, nervis non elevatis, subtus pallida, praecipue ad nervos breviter et subdense ferrugineo-villosula vel serius glabrata, costa crassa elevata, nervis lateralibus utroque latere c. 13, gracilibus, prominulis, angulo lato adscendentibus, arcuatis, prope marginem conjunctis, nervulis inconspicuis laxe reticulatis; flores in axillis dense congesti, in cymas breves densas dispositi, sessiles vel subsessiles; hypanthium villosulo-puberulum vel fere glabrum, calyce 0.5-0.8 mm. longo 4-dentato, dentibus late triangularibus obtusis vel acutiusculis glabris; corolla 4.5-7 mm. longa, in alabastro obtusa vel subacuta, extus glabra, lobis oblongis acutiusculis, tubum aequantibus vel interdum multo longioribus; bacca subglobosa rubra 4 mm. longa glabrata.—Venezuela: Near Colonia Tovar, alt. 1,200 m., 1854-55, *A. Fendler 546* (Gray Herb., type; duplicate in Herb. Kew.), 590 (G, K, M). Headwaters of Chichiriviche and Petaquire rivers, Federal District, 1,800-2,000 m., *Pittier 8124* (W). Cerros de Avila, Federal District, 1,600 m., *E. Pittier 38* (W). Los Venados, near Caracas, *E. Pittier 174* (G).

Neoblakea, gen. nov.—Frutices; folia opposita breviter petiolata membranacea; stipulae trifidae parvae, intus glanduligerae, deciduae; inflorescentiae terminales, cymoso-paniculatae, laxae multiflorae, floribus hermaphroditis sessilibus secundis parvis bracteolatis, bracteolis basi glandulis 1-2 rubris tuberculiformibus onustis; hypanthium turbinatum; calyx 5-partitus, laciniis angustis, adscendentibus vel subrecurvis, persistentibus; corolla parva infundibuliformis, tubo brevi recto, fauce sparse villosa, intus parte inferiore sparse villosulo, limbi lobis 5 brevibus ovalibus obtusis imbricatis, uno exteriore; stamina 5 fauce corollae inserta, filamentis brevibus glabris, antheris exsertis dorso affixis oblongis; ovarium 3-4-loculare, loculis elongatis tubulosis, semisuperum; ovula in loculis solitaria, ab apice pendula; stylus brevis filiformis, stigmate 3-4-lobo; drupa subglobosa semisupera, carne parca dura, putamine ligneo profunde 3-4-sulcato, loculis angustis; semina pendula.

Type species, *Neoblakea venezuelensis*.

Neoblakea venezuelensis, sp. nov.—Frutex multiramulosus, ramulis gracilibus teretibus ferrugineis vel ochraceis, vetustioribus rimosis, novellis glabris vel interdum bifariam puberulis, internodiis plerumque 2-3 cm. longis; stipulae 2-3 mm. longae fere ad basin trifidae, laciniis lineari-filiformibus glabris; petiolus gracilis 2-3 mm. longus ciliatus, basi persistente et tumida; lamina ovata, ovato-oblonga vel elliptico-ovata, 2.5-8 cm. longa, 1.3-3.5 cm. lata, longe acuminata, acumine angusto attenuato, basi obtusa vel subrotundata, supra viridis, sparse scaberula vel fere glabra, costa prominente, nervis vix prominulis, subtus vix pallidior, ad nervos minute adpresso-

pilosula, aliter glabra, costa gracili elevata, nervis lateralibus utroque latere c. 8, gracillimis, prominentibus, angulo acuto adscendentibus, arcuatis, prope marginem conjunctis, nervulis vix prominulis arcte reticulatis; paniculae sessiles et e basi trichotomae vel interdum graciliter pedunculatae, 1.5-4 cm. longae et aequilatae vel latiores, laxae multiflorae, multiramosae, ramulis gracilibus rigidis angulo lato adscendentibus vel divaricatis, bifariam hirtellis, floribus sessilibus et secus ramulos breves paucifloros secundis, bracteis viridibus linearibus vel subulatis 1-3 mm. longis persistentibus, bracteolis subulatis minutis; hypanthium 1 mm. longum adpresso-puberulum, calycis laciniis 1-1.2 mm. longis, lineari-oblongis, sensim attenuatis, acutiusculis, glabris; corolla alba, extus glabra vel ad apicem in alabastro minutissime puberula, 4 mm. longa, tubo crasso superne paullo ampliato, lobis patentibus vel subreflexis tubo paullo brevioribus intus puberulis; antherae 0.7 mm. longae; drupa subglobosa 3.5-4 mm. diam. ferruginea glabrata, calyce persistente vulgo coronata.---Venezuela: Guaremales, road from Puerto Cabello to San Felipe, State of Carabobo, in forest, alt. 10-100 m., June 19, 1920, *H. Pittier 8878* (U. S. Nat. Herb. No. 1,065,273, type; duplicates in Gray Herb. and herb. N. Y. Bot. Gard.). Around Palmasola, in forest along the Aroa River, State of Lara, near sea level, June, 1913, *Pittier 6376* (W). Río Chiquire, August 4, 1891, *Eggers 13388* (W). Los Mengos, July 17, 1891, *Eggers 13388* (W). Without locality, July 29, 1891, *Eggers* (W).

The plant here described is represented by an ample amount of material in good condition, showing an abundance of both flowers and fruits. Its proper allocation has offered great difficulty, but detailed study shows that it must be an abnormal member of the Rubiaceae. It does not fit well in any tribe of the family, but the structure of the fruit and corolla makes necessary its reference to the Guettardeae, although even there it is anomalous. To the Guettardeae belongs another anomalous genus, *Machaonia*, to which the present plant has some general resemblance, as to form of leaves and inflorescence.

It is useless to compare *Neoblakea* with *Machaonia* or other genera of the Guettardeae, because it is not closely related to any of them. Particularly noteworthy is the form of the stipules, and the curious small glands present at the base of the bractæoles. The latter structure does not exist in any other group of the family with which I am familiar.

The fruit is remarkable for the fact that it is about one-half superior, but a similar condition is found in certain other genera of Rubiaceae, notably *Houstonia*. The fruit appears to be dry, and probably it is normally 4-celled, but the number of cells varies as it does in the genus *Guettarda*. When cross-sectioned there is seen

very plainly the stone, with its 4 thin winglike angles, the spaces within and outside which are filled with a somewhat woody, compact tissue which may be sectioned rather easily with a sharp razor blade.

This well-marked new genus of the family Rubiaceae is named for Dr. S. F. Blake, of the United States Department of Agriculture, as a token of personal esteem and in recognition of the great amount of attention which he has devoted to the study of Venezuelan plants.

Cosmocalyx, gen. nov.—Arbores, ramulis teretibus; stipulae interpetiolares distinctae anguste triangulares caducae; folia opposita longipetiolata, lamina lata integra; flores parvi pedicellati cymosi, cymis multifloris in paniculam densam terminalem dispositis, bracteis linearibus vel subulatis; hypanthium obovoideum; calyx plerumque ad basin 4-lobus, lobis in anthesi brevibus inaequalibusque, uno in statu fructifero in laminam magnam ovatam petiolatam integram coloratam foliaceam expanso; corolla parva tubuloso-infundibuliformis, tubo brevi abrupte in faucem obconicam dilatato, lobis 4 oblongis obtusis imbricatis; stamina 4 prope basin faucis corollae inserta, filamentis brevibus linearibus, antheris linearibus contortis basi sagittatis; discus annularis carnosus glaber; ovarium 2-loculare, stylo filiformi antheris aequilongo; ovula solitaria erecta; capsula cylindracea costata coriacea 2-cocca, coccis monospermis; semina cylindracea erecta, endospermo carnosio.

The relationship of this Mexican tree is evidently with the monotypic Cuban genus, *Phyllomelia*, a group known only from scant material. In *Phyllomelia* all the calyx lobes are more or less accrescent, none of them being petiolate; the stipules are persistent, and the anthers obovate. The proper position of both these genera within the family Rubiaceae is still uncertain. They seem to be sharply differentiated from all other American genera, and they form a group which perhaps should be recognized as a distinct tribe.

Cosmocalyx spectabilis, sp. nov.—Arbor 5-8-metralis, ramulis teretibus griseis vel ochraceis rimosis, internodiis brevibus, novellis sparse puberulis; stipulae anguste triangulares 2 mm. longae acutiusculae puberulae vel glabratae caducae; petioli graciles 1-5.5 cm. longi, glabri vel fere glabri; lamina rhombico-obovata vel elliptico-obovata, 6-17 cm. longa, 2-7 cm. lata, subabrupte acuminata, basi acuta vel prope basin abrupte contracta et in petiolum longi-attenuata, tenuis, integra, in sicco rubro tincta, supra viridis, plus minusve lucida, subtus paullo pallidior, secus costam saltem in axillis sparse barbata, costa venisque gracilibus elevatis, nervis lateralibus utroque latere 5-6, adscendentibus, subarcuatis, prope marginem obscure et irregulariter conjunctis; flores cymosi, cymis densis umbelliformibus in paniculam magnam densam terminalem dispositis, paniculis floriferis 3-6 cm. latis, fructiferis usque ad 14

cm. latis, bracteis usque ad 2 mm. longis, pedicellis gracilibus usque ad 5 mm. longis puberulis; hypanthium 1 mm. longum dense fulvo-puberulum; calycis lobi plerumque 4, interdum 5, eorum 3 (vel 4) c. 1 mm. longis late triangularibus vel rotundatis glabratiss, alio paulo longiore dense puberulo, in fructu in limbum magnum rubrum vel purpurascensentem graciliter 3-7 mm. longe petiolatum dilatato, lamina ovata 2-3.5 cm. longa, 1.2-1.8 cm. lata, prope basin latissima, versus apicem obtusum angustata, basi rotundata et saepe abrupte breviterque decurrens, tenui, integra, ad venas sparse minuteque puberula, lucidula, basi 5-nervia, nervulis prominentibus laxo reticulatis; corolla 7 mm. longa extus sparse minuteque puberula vel glabrata, tubo angusto vix 2 mm. longo, fauce 3 mm. lata, lobis oblongis obtusis intus minute papillosis, tubo subaequalibus; antherae 3.5 mm. longae; capsula cylindracea 6-8 mm. longa costata puberula vel glabrata, basi acuta.—Yucatan: Without definite locality, in 1917-21, *G. F. Gaumer 24270* (Herb. Field Mus. No. 552,275, type), *24219*.

Apparently conspecific is a specimen in the United States National Herbarium from El Talabasal, Michoacán or Guerrero, at 200 m., *Langlassé 404*, collected in October, 1898.

This plant is a remarkable one in several respects. The flowering and fruiting specimens are so different in aspect that at first I did not associate them. In the flowering specimens the calyx lobes are very small, and there is nothing to indicate that one will develop into a large ovate limb. A few sterile flowers present on the fruiting specimens are exactly like the young calyces, else I should hesitate to join the two Yucatan collections.

The tree must be a very showy and handsome one, like *Calyco-phyllum*, which the fruiting specimens much resemble in general appearance. Its occurrence in two regions so distant as Yucatan and Michoacán is remarkable, and it is strange that so conspicuous a tree has not been collected more frequently, and described long ago.

***Randia caracasana*, sp. nov.**—Frutex erectus, ramulis gracilibus vel crassiusculis, teretibus, brunnescentibus, novellis hirtellis, apice spinis 3-4 validis 6-13 mm. longis armatis; stipulae glumaceae, imbricatae, ovatae, breviter acuminatae, striatae, 3-4 mm. longae, persistentes, glabrae; folia ad apices ramulorum congesta, petiolo 3-5 mm. longo, dense hirtello; limbus late obovatus, rotundato-obovatus, late ovalis, vel rotundato-ovatus, 3-5.5 cm. longus, 2-4 cm. latus, apice abrupte breviterque acuminatus et mucronatus, basi obtusus vel rotundatus, membranaceus, supra viridis, pilis brevibus adpressis sparsis vel densis pilosus vel glabratus, subtus densissime pilis griseis velutino-pilosus, costa et nervis gracilibus, prominentibus, nervis lateralibus utroque latere c. 10, angulo lato vel angusto adscendentibus, fere rectis, prope marginem laxo con-

junctis; flores dioeci, ad apices ramulorum solitarii vel 2-3, breviter pedicellati, pedicellis dense pilosis; calyx fere ad basin in lacinias 5 obovatas cuspidato-acuminatas virides extus breviter pilosas 5-7 mm. longas divisus; corolla floris masculi extus sparse pilosa, tubo gracili, 13 mm. longo, lobis 5, obovatis, obtusis, 8 mm. longis, intus sparse pilosis; antherae exsertae, lineari-oblongae, fere 3 mm. longae, obtusae; bacca immatura globoso-ovoidea, 8 mm. longa, densissime pilosa.—Venezuela: Bosque de Catuche above Caracas, alt. 1,200-1,800 m., June 1, 1913, *H. Pittier 6296* (Herb. Field Mus. No. 531,385, type). Río Catuche, July 15, 1891, *Eggers 13228a*.

The Eggers specimen was determined as *R. spinosa* var. *pubescens* Schum., but in *R. spinosa* the calyx lobes are short and subulate. From *R. calycina* Cham. the Venezuelan plant differs in the abundant pubescence of all parts, shorter calyx lobes, and small anthers.

Anisomeris volubilis, sp. nov.—Frutex volubilis 6-metralis, ramulis gracilibus teretibus fusco-ferrugineis, vetustioribus rimosis, novellis ferrugineo-hirtellis, internodiis brevibus vel elongatis; stipulae deciduae, lanceolato-subulatae, longe attenuatae, hirtellae; folia breviter petiolata opposita, petiolo 2.5-7 mm. longo dense ferrugineo-hirtello; lamina firme membranacea, anguste oblonga vel lanceolato-oblonga, 6-11 cm. longa, 2-3.5 cm. lata, longe sensimque acuminata, acumine acuto, basi acuta vel obtusa, supra fusca, ad costam elevatam hirtella, aliter glabra, nervis prominentibus, subtus brunnescens, ad costam prominentem ferrugineo-hirtella, ad nervos hinc inde adpresso-pilosa, aliter glabra, nervis lateralibus utroque latere c. 8 gracillimis prominulis angulo acuto adscendentibus subarcuatis prope marginem conjunctis, nervulis manifestis sed vix prominulis laxe reticulatis, areolis crebre parallelo-lineolatis; inflorescentiae axillares 1.2-2.3 cm. longe pedunculatae triflorae, pedunculo gracillimo dense ferrugineo-hirtello, floribus sessilibus, bracteis filiformibus 3-4 mm. longis; hypanthium anguste cylindricum 2 mm. longum dense strigosum; calyx 5 mm. longus extus strigosus, fere ad basin in lacinias 4 anguste lineares erectas divisus; corolla albida extus dense strigosa, tubo filiformi 2 cm. longo 0.7 mm. crasso, lobis 4 patentibus linearibus 5-6 mm. longis obtusis; antherae inclusae; stylus gracillimus 13 mm. longus.—Venezuela: In fluminis Guainiae (Río Negro) ripis inundatis, August, 1854, *R. Spruce 3547* (Herb. Kew., type).

Only two corollas, both open, are available for study, and it is somewhat uncertain whether the plant should be referred to *Anisomeris* or *Chomelia*.

Guettarda Gaumeri, sp. nov.—Ramuli teretes fusco-brunnei lenticellis paucis pallidis elevatis conspersi, novellis dense pilis brevibus patentibus ochraceis pilosis, internodiis brevibus vel elongatis; stipulae late ovatae obtusae, extus dense pilis adscendentibus pilosae, intus brunneae et sparse sericeae; petioli validi 2.5-4 mm. longi dense tomentosi; lamina oblonga vel oblongo-

elliptica, 2.5-4.5 cm. longa, 1-2 cm. lata, acuta vel obtusa et apiculata, basi late rotundata vel obtusa, subcoriacea, supra viridis, dense velutino-pubescent, subtus pallidior, densissime pilis patentibus intertextis ochraceis pilosa, costa valida prominente, nervis lateralibus utroque latere c. 8, arcuato-adscendentibus, fere ad marginem subrevolutum distinctis; cymae axillares plerumque 3-florae, pedunculis validis 4-8 mm. longis dense pilis longis adscendentibus pilosis, floribus sessilibus vel lateralibus 2 mm. longe pedicellatis; bracteae lanceolatae vel ovatae, 3-4 mm. longae, calycem aequantes vel longiores; hypanthium ut calyx dense pilis longis adscendentibus pilosum, calyce breviter bilobo hypanthium aequante; corolla in alabastro dense pilis longis albidis adscendentibus pilosa.—Yucatan: Without definite locality, in 1917-21, *G. F. Gaumer 24239* (Herb. Field Mus. No. 552,244).—British Honduras: Honey Camp, September, 1929, *C. L. Lundell 352*.

Closely related to *G. elliptica* Sw., which also occurs in Yucatan, but that is distinguished by having pubescence of short, closely appressed hairs.

Guettarda caracasana Standl., sp. nov. (Pittier, Pl. Usual. Venez. 197. 1926, hyponym).—Frutex vel arbor parva 3-6-metralis, ramulis crassis ferrugineo-brunneis subteretibus rimosis, novellis dense pilis patentibus vel adscendentibus fulvis pilosis, internodiis brevibus vel elongatis; stipulae caducae 7-9 mm. longae, ovatae vel lanceolatae, acuminatae vel attenuatae, dense adpresso-hirsutae; folia opposita, petiolo 1-3 cm. longo dense pilis brevibus plerumque patentibus fulvis vel aureis hirsutulo; lamina late elliptica vel oblongo-elliptica, 7-13 cm. longa, 3-8 cm. lata, crasse membranacea vel subcoriacea, acuta vel breviter acuminata, basi obtusa vel rotundata, supra viridis, dense hirtella vel hispidula, nervis prominulis, subtus pallidior, undique pilis intertextis rigidiusculis tomentosa, ad nervos pilis patentibus vel adpressis hispida, costa gracili elevata, nervis lateralibus utroque latere c. 9, angulo acuto adscendentibus, prominentibus, arcuatis, prope marginem conjunctis, nervulis prominulis reticulatis; cymae densae multiflorae capituliformes, 2.5-7 cm. longe pedunculatae, pedunculo gracili hispidulo et vulgo tomentoso, floribus sessilibus vel brevissime pedicellatis congestis, bracteis lanceolatis vel linearibus calycem aequantibus vel longioribus; calyx tubulosus 4 mm. longus truncatus vel brevissime lobatus, dense fulvo-tomentosus et breviter pilosus; corolla pallide rosea vel alba extus dense fulvo-sericea, tubo gracili, 1.5 cm. longo, superne paullo ampliata, fauce sparse villosa, lobis 6 oblongis, 6-9 mm. longis inaequalibus obtusis, intus glabris; fructus magnus ovalis brunnescens, c. 1.6 cm. longus et 1.2 cm. latus, basi et apice rotundatus, dense minuteque et sparse hispidulus, 6-locularis.—Venezuela: Middle Cotiza, near Caracas, in light forest, June 24, 1917, *H. Pittier 7222* (U. S. Nat. Herb. No. 987,347, type). Between Caracas and La Guayra, 600 m., *Fendler 576* (G). Caracas and vicinity, *Bailey 397* (W). Lower

Cotiza near Caracas, 800-1,200 m., *Pittier 7896* (W). Lower Catuche Wood above Caracas, 1,000-1,200 m., *Pittier 7282* (W). Middle Cotiza near Caracas, 1,000-1,400 m., *Pittier 7050* (W.) Las Ajuntas, *Eggers 13347* (W).

The species is well marked by the large corollas and the copious matted pubescence of the lower surface of the leaves.

Guettarda frondosa Moritz, in herb., sp. nov. *Matthiola frondosa* Kuntze, Rev. Gen. Pl. 1: 228. 1891, nomen.—Ramuli subteretes ferruginei lenticellati, novellis subtetragonis dense strigosis, internodiis 1 cm. longis; stipulae caducae, non visae; folia opposita, petiolo gracili 1-6 cm. longo, sparse vel dense strigoso; lamina late elliptica vel subrotundata, crasse membranacea, 12-15 cm. longa, 8-10 cm. lata, abrupte acuminata, acumine triangulari 1-1.5 cm. longo, basi acuta vel abrupte contracta et decurrens, supra viridis, ad nervos strigosa, aliter glabra, nervis prominulis, subtus paullo pallidior, ad nervos nervulosque minute adpresso-pilosula, aliter glabra, costa gracili elevata, nervis lateralibus utroque latere c. 12, gracilibus, prominentibus, angulo acuto adscendentibus, arcuatis, prope marginem conjunctis, nervulis prominulis transversis rectis parallelis; inflorescentiae axillares bifurcatae, ramis c. 1 cm. longis, dense secundifloris, pedunculo 2.5-4 cm. longo gracili dense minuteque tomentoso, floribus sessilibus; calyx campanulatus 1.2 mm. longus, truncatus vel brevissime et obtuse dentatus, dense et minute tomentulosus; corolla in alabastro 6 mm. longo, tubo crassiusculo extus dense retrorso-sericeo.—Venezuela: La Guayra, *Moritz 1735*, "Herbar. W. Sonder" (Herb. Kew., type).

The type sheet in the Kew herbarium bears this unpublished name attributed to Moritz. Kuntze (l. c.) made a new combination, *Matthiola frondosa*, based upon Moritz's name, but the latter seems not to have been published, and I find no reference to it anywhere. Among the Venezuelan species this plant is easily recognized by the strictly bifurcate inflorescence. The only species similar is *G. discolor* Rusby, but the pubescence of that is altogether different.

Guettarda Pittieri, sp. nov.—Arbor c. 6-metralis, ramulis crassis teretibus ferrugineis, plus minusve rimosis et lenticellatis, novellis dense ochraceo-strigosis; stipulae caducae, 5-6 mm. longae, ovatae, acuminatae, dense pilis subadpressis indutae; folia opposita, petiolo gracili 1-1.8 cm. longo adpresso-pilosulo et sparse patenti-piloso; lamina crasse membranacea, late elliptica, elliptica vel oblongo-elliptica, 8-15 cm. longa, 4-8.5 cm. lata, acuta vel acuminata, interdum abrupte acuminata, basi obtusa vel rotundata, rarius acuta, supra viridis, sparse minuteque strigillosa vel glabrata, nervis prominentibus, subtus vix pallidior, undique pilis brevibus nitentibus sericeo-strigosa, costa gracili elevata, nervis lateralibus utroque latere 10-12, prominentibus, angulo acuto adscendentibus, subarcuatis, juxta marginem conjunctis; cymae pauciflorae densae

capituliformes, 1-2.8 cm. longe pedunculatae, floribus sessilibus, bracteis linearibus vel subulatis, plerumque calyce brevioribus; calyx campanulatus 3 mm. longus truncatus dense sericeus; corolla alba extus dense fulvo-sericea, tubo 16-18 mm. longo, superne paullo ampliato, fauce 3 mm. lato, lobis 5-6 oblongis vel late oblongis apice rotundatis intus glabris patentibus; fructus globosus vel depresso-globosus 1.3-1.8 cm. latus, dense et minute tomentosus, 5-6-locularis, basi late rotundatus, apice saepe apiculatus.—Venezuela: Río Chico, Miranda, June 20, 1923, *Alfredo Jahn 1283* (U. S. Nat. Herb. No. 1,186,870, type). Near Caracas, 1,000 m., *Pittier 9622* (W, Y). Between Caracas and La Guayra, 600 m., *Fendler 575* (G). La Guayra, *Moritz 959* (K).

Vernacular name, "cruceto." Related to *G. caracasana*, but differing especially in the appressed pubescence of the leaves.

Malanea Fendleri, sp. nov.—Ramuli teretes crassiusculi ferruginei vel grisei, novellis dense ferrugineo-hirsutis; stipulae deciduae elliptico-ovatae c. 6 mm. longae acutae, dense adpresso-hirsutae; folia opposita, petiolo 6-17 mm. longo ferrugineo-hirsuto; lamina subcoriacea, elliptico-oblonga vel oblonga, 6.5-14 cm. longa, 2.5-6.5 cm. lata, acuta vel abrupte acuta, basi obtusa vel anguste rotundata, supra viridis, glabra vel hinc inde hispida, costa gracili prominula, nervis lateralibus manifestis sed non elevatis, nervulis obsoletis, subtus vix pallidior, brunnescens, ad costam nervosque hispida, aliter pilis brevibus rigidis adpresso-hispidula, costa gracili elevata, nervis lateralibus utroque latere c. 7, prominentibus, angulo lato adscendentibus, arcuatis, prope marginem conjunctis, nervulis arcte reticulatis subimpressis, margine plano; paniculae laxae multiflorae 3-4 cm. longe pedunculatae, 4.5-5.5 cm. longae, 1-1.5 cm. latae, ramis brevibus rigidis divaricatis vel adscendentibus, dense pilis patentibus vel adscendentibus ferrugineo-hispidulis, floribus sessilibus, bracteis minutis calyce multo brevioribus; hypanthium cylindricum glabrum; calyx 1-1.3 mm. longus scaberulus ad medium lobatus, lobis rotundatis; fructus oblongus c. 1 cm. longus, 4 mm. latus, glaber.—Venezuela: Near Colonia Tovar, alt. 1,800 m., 1856-57, *A. Fendler 2555* (Gray Herb., type).

The species does not appear to be closely related to any of those reported from Brazil or the Guianas.

Malanea hirsuta, sp. nov.—Frutex alte scandens, ramulis gracilibus teretibus brunnescentibus sparse lenticellatis, novellis dense breviterque fulvo-hispidis, internodiis brevibus vel elongatis; stipulae caducae c. 5 mm. longae lanceolatae acuminatae, dense adpresso-hispidae; folia opposita, petiolo 6-8 mm. longo valido dense hirsuto; lamina lanceolato-oblonga, 5.5-8 cm. longa, 2-3 cm. lata, acuminata, basi acuta, crasse membranacea, supra viridis, dense hirsuta, costa gracili elevata, nervis lateralibus impressis, nervulis obsoletis, subtus pallidior, dense pilis longis patentibus

pallidis hirsuta, costa gracili elevata, nervis lateralibus utroque latere 10-11, angulo acuto adscendentibus, prominentibus, subarcuatis, marginem planum fere attingentibus; paniculae spiciformes 1-2.5 cm. longe pedunculatae, 2-3 cm. longae, interdum basi ramosae, rhachi dense breviterque hirsuta, floribus sessilibus, bracteis minutis calyce multo brevioribus; hypanthium cylindricum glabrum; calyx 1 mm. longus, lobis brevibus rotundatis hispidulis; fructus oblongus 10-12 mm. longus, 5 mm. latus, basi et apice obtusus, aurantiacus, laevis, glaber, 2-locularis.--Venezuela: A few miles south of Colonia Tovar, alt. 1,050 m., May 16, 1855, A. Fendler 569 (Gray Herb., type; duplicates in K, M, Y).

The plant shows a close relationship with *M. Fendleri*, but apparently it is quite distinct in the character of the pubescence and in the acute leaf bases.

Malanea ursina, sp. nov.—Ramuli crassi subteretes brunnescentes, novellis dense pilis brunneis rigidis hispidis, internodiis brevibus; stipulae deciduae ovato-oblongae 7 mm. longae acutae extus pilis brevibus adscendentibus hispidae; folia opposita, petiolo crasso 4-6 mm. longo supra sulcato breviter hispido; lamina coriacea, elliptica vel ovato-elliptica, 5-8.5 cm. longa, 2-4.5 cm. lata, abrupte acuminata, acumine angusto obtusiusculo, basi obtusa vel acutiuscula, supra lucida, sparse, ad nervos densius, pilis brunneis patentibus hispida vel serius glabrata, costa et nervis valde impressis, subtus brunnescens, breviter brunneo-hispida, costa crassa elevata, nervis lateralibus utroque latere c. 6, elevatis, gracilibus, arcuatis, prope marginem conjunctis, nervulis reticulatis et manifestis sed vix elevatis, margine revoluti; panicula spiciformis 4 cm. longa et 1 cm. lata, 1.5 cm. longe pedunculata, rhachi hispidula, ramis lateralibus brevissimis, floribus sessilibus dense glomeratis; hypanthium cylindricum; calyx 0.8 mm. longus, lobis brevibus rotundato-ovatis minute adpresso-hispidulis; corolla in alabastro 1.5 mm. longa dense ochraceo-strigillosa.—Venezuela(?): Vasiva, Spruce (Herb. Kew., type).

From the species known from the neighboring regions of Brazil, this is easily recognized by the copious spreading pubescence of the leaves, consisting of short and harsh hairs.

Faramea brachysiphon, sp. nov.—Frutex 2-metralis omnino glaber, trunco 5 cm. diam., ramulis gracilibus subteretibus, novellis in sicco pallidis, internodiis elongatis; stipulae persistentes virides subrotundatae 3-4 mm. longae, apice obtusae vel rotundatae, abrupte 1 mm. longe mucronatae; folia opposita breviter petiolata, petiolo gracili 4-7 mm. longo; lamina membranacea, oblonga vel anguste oblonga, 11-16 cm. longa, 3-5 cm. lata, subabrupte acuminata, acumine angusto attenuato obtusiusculo, basi acuta, supra viridis, nervis vix elevatis, subtus paullo pallidior, costa gracillima elevata, nervis lateralibus utroque latere c. 15, gracillimis, prominulis, fere rectis, angulo lato divergentibus, remote a margine irregulariter

conjunctis, nervulis prominulis laxe reticulatis; inflorescentia terminalis cymoso-paniculata 2-2.5 cm. longe pedunculata, c. 3.5 cm. lata, ramulis brevibus glabris, bracteis basalibus linearibus viridibus usque ad 8 mm. longis, aliis minutissimis, pedicellis 1-2 mm. longis; hypanthium late oblongum 1.5 mm. longum, calycis dentibus triangularibus minutis acutis vix 0.5 mm. longis; corolla caerulea glabra, tubo crassiusculo 3 mm. longo, lobis 5 lanceolato-oblongis 6-7 mm. longis obtusis patentibus; antherae lineares semiexsertae.—British Honduras: Middlesex, in jungle, alt. 60 m., September 17, 1929, *W. A. Schipp 345* (Herb. Field Mus. No. 603,047, type).

Among the related blue-flowered species of *Faramea* occurring in Central America this is easily separated by its very short corolla tube. The collector remarks that it is a beautiful shrub, and the same may be said regarding the other *Farameas* which have blue blossoms.

Cephaelis aneurophylla, sp. nov.—Ramuli crassiusculi subteretes laeves glabri, internodiis 2-5.5 cm. longis; stipulae vaginam 3 mm. longam efformantes, parte superiore ut videtur delapsa; folia opposita brevissime petiolata, petiolo crasso 2-6 mm. longo glabro; lamina subcoriacea, utrinque glabra, anguste oblanceolato-oblonga vel anguste elliptico-oblonga, 8-14 cm. longa, 2.5-4.3 cm. lata, sensim acuminata, apice obtusiusculo, basin versus longe sensimque attenuata, basi ipsa truncata vel subcordata, auriculis rotundatis, conspicue marginata, supra viridis, densissime et minute puncticulata, nervis obsoletis, subtus albidia, costa pallida crassa elevata, nervis obsoletis; inflorescentiae axillares 4-6.5 cm. longe pedunculatae, e capitulis 3 breviter pedunculatis compositae, basi bracteis 2 late ovatis acutis crassis 1.5-2 cm. longis glabris distinctis fulcratae; capitula dense multiflora c. 1 cm. lata, 3-4 mm. longe pedunculata, bracteis exterioribus rotundatis, 7-8 mm. longis et saepe latioribus, apice rotundatis, interioribus angustioribus, floribus sessilibus; calyx ad apicem fructus persistens, glaber, 5-partitus, laciniis anguste oblongis obtusis; fructus coccineus, ovalis vel subglobosus, 7-9 mm. longus, glaber, pyrenis dorso obtusissime tricostatis.—Venezuela: Between Maracay and Choroni, alt. 750 m., December 12, 1856, *A. Fendler 1979* (Gray Herb., type; duplicate in herb. Kew.).

Easily recognized by the very short petioles and truncate or subcordate leaf bases.

Cephaelis botryocephala, sp. nov.—Frutex 1.5-2.5 m. altus, ramulis crassiusculis obtuse tetragonis vel subteretibus glabris, internodiis brevibus vel elongatis; stipulae persistentes, erectae, 6-7 mm. longae, virides, glabrae, late ovatae, basi breviter connatae, apice breviter bifidae, lobis latis obtusis; folia petiolata opposita, petiolo 2-3.5 cm. longo gracili vel crassiusculo glabro; lamina crasse membranacea vel subcoriacea, elliptica, oblongo-elliptica vel ovalis,

7-17.5 cm. longa, 2.5-9.5 cm. lata, abrupte breviterque vel interdum longius acuminata, acumine triangulari obtuso, basi cuneatim acuta vel rarius obtusa vel subrotundata, utrinque glabra, supra viridis, nervis non elevatis, subtus pallidior, costa gracili elevata, nervis lateralibus utroque latere c. 11, ceteris intermediis multo gracilioribus parallelis interpositis, angulo lato adscendentibus, gracillimis, prominulis, arcuatis, in marginem desinentibus; inflorescentiae axillares, floribus sessilibus in capitulis dense congestis, capitulis in axillis fasciculatis vel breviter pedunculatis et in racemos breves dispositis, inflorescentiis usque ad 1 cm. longe pedunculatis, recurvis, capitulis ovalibus 1-1.4 cm. longis; bracteae purpureae, distinctae, late ovaes vel subrotundatae, 5-8 mm. longae, rigidae, dense imbricatae, apice rotundatae, glabrae, ciliolatae; hypanthium turbinatum vix 1 mm. longum glabrum; calyx 1.5 mm. longus, lobis 5 rotundatis ciliolatis; corolla bracteis paullo longior, extus glabra, tubo 8 mm. longo superne paullo dilatato, lobis 5 triangulari-ovatis acutis 2 mm. longis suberectis.—Venezuela: El Portachuelo, between Maracay and Ocumare de la Costa, Miranda, January 29, 1922, *H. Pittier 10133* (U. S. Nat. Herb. No. 1,120,556, type; duplicate in herb. N. Y. Bot. Gard.). Same locality, January 20, 1924, *Pittier 11364* (W, Y). Between Agua Blanca and Cumbote, alt. 1,500 m., January 30, 1858, *Fendler 2554* (G).

Cephaelis botryocephala is much like *C. axillaris* Sw., but in that species the heads are simple and sessile in the leaf axils.

***Cephaelis macrocarpa*, sp. nov.**—Ramuli graciles subteretes glabri, internodiis 1-4.5 cm. longis; stipulae persistentes, 5-6 mm. longae, alte connatae, apice bidentatae, dentibus subulatis c. 1 mm. longis erectis sinu latissimo rotundato sejunctis; folia opposita, petiolo gracili 0.6-3 cm. longo glabro; lamina subcoriacea, anguste oblonga vel lanceolata-oblonga, 9.5-17 cm. longa, 2.5-5 cm. lata, acuminata vel longiacuminata, acumine angusto acuto, basin versus longe angustata, basi ipsa acuta, supra viridis, glabra, costa nervisque non elevatis, subtus pallida, secus costam validam elevatam ciliata, aliter glabra, nervis lateralibus utroque latere c. 20, aliis vix tenuioribus parallelis interpositis, gracillimis, prominulis, angulo fere recto divergentibus, nervulis inconspicuis laxae reticulatis; inflorescentiae terminales vel pseudo-axillares, 3.5-6 cm. longe pedunculatae, capitatae, simplices, pedunculis crassis erectis rectis vel leviter curvis, capitulis dense paucifloris, floribus sessilibus; bracteae 2 exteriores late ovatae obtusae 8 mm. longae glabrae scaberulociliatae, interioribus paullo brevioribus ovalibus, ovatis vel lanceolatis, obtusis vel acutis; calyx ad apicem fructus persistens, tubuloso-campanulatus, 4-5 mm. longus, inaequaliter 5-dentatus; fructus 12 mm. longus subglobosus, basi et apice rotundatus, glaber, obtuse costatus; semina semiglobosa 1 cm. longa, dorso obtuse costata, facie inferiore plana.—Venezuela: Near Colonia Tovar, alt. 1,500 m., 1856-57, *A. Fendler 1990* (Gray Herb., type; duplicate in herb. Kew.).

Palicourea Fendleri, sp. nov.—Frutex, ramulis gracilibus teretibus laevibus glabris, in sicco olivaceis, internodiis brevibus vel elongatis; stipulae 3-4 mm. longae breviter connatae profunde bifidae, lobis ovatis apice obtusis vel rotundatis glabris; folia opposita, petiolo 0.7-2.5 cm. longo supra bisulcato glabro; lamina anguste lanceolata vel ovato-oblonga, 10-19 cm. longa, 3-7.5 cm. lata, longe sensimque acuminata, basi obtusa vel acuta, crasse papyracea, glabra, supra in sicco luteo-viridis vel laete viridis, costa nervisque prominentibus, subtus pallidior vel fere concolor, costa gracili elevata, nervis lateralibus utroque latere 9-13, angulo lato adscendentibus, gracilibus, arcuatis, remote a margine arcuato-conjunctis, nervulis inconspicuis; inflorescentiae cymoso-paniculatae vel subcorymbosae, 4.5-9 cm. longe pedunculatae, laxae pauciflorae, 3-5.5 cm. longae, 3.5-7 cm. latae, ramulis divaricatis vel adscendentibus, paucis, minute puberulis; bracteae minutissimae; flores pedicellati, pedicellis 2-8 mm. longis; hypanthium late turbinatum minutissime puberulum vel fere glabrum; calyx 0.5 mm. longus fere glaber, lobis minutis late rotundatis; corolla solum in alabastro visa, alabastris ubique dense minuteque luteo-tomentosis; fructus subglobosus 6-7 mm. longus glaber sulcatus, costis obtusis.—Venezuela: Between Maracay and Choroni, alt. 1,650 m., January 29, 1857, A. Fendler 1983 (Gray Herb., type; duplicate in herb. Kew.). Puerto Cruz, Federal District, 900 m., Whitford 59 (G). Caracas, Birschel (G, K).

From *P. guianensis* Aubl., to which it is closely related, this differs in the narrow leaves and small stipules. It is nearly allied, also, with *P. semirasa* Standl., of Colombia, but in that species the corolla is merely papillose about the apex.

Palicourea Jahnii, sp. nov.—Rami vetustiores nigrescentes rimosi, ramulis teretibus glabris dense foliatis; stipulae in vaginam incrassatam 1-2 mm. longam truncatam connatae, vagina in lobos 4 remotos triangulares 1-1.5 mm. longos erectos rigidos desinente; folia opposita glabra, petiolo 0.5-2 cm. longo supra late sulcato; lamina coriacea, elliptica, 4-12 cm. longa, 2-6 cm. lata, apice obtusa, acutiuscula vel fere rotundata, rarius breviter acuminata, basi acuta vel obtusa, luteo-viridis, costa supra prominente, nervis subimpressis, costa subtus elevata crassiuscula, nervis lateralibus utroque latere c. 9, angulo lato adscendentibus, gracilibus, arcuatis, prope marginem arcuato-conjunctis, margine anguste revoluti, nervulis obscuris; inflorescentia 0.8-1.8 cm. longe pedunculata cymoso-corymbosa dense multiflora, 3-6 cm. longa, 3.5-8 cm. lata, ramulis gracilibus adscendentibus vel suberectis minutissime puberulis; bracteae subulatae 1-3 mm. longae persistentes; flores pedicellati, pedicellis 1-6 mm. longis minute puberulis; hypanthium vix 1 mm. longum late turbinatum minutissime papilloso-puberulum; calyx 0.6 mm. longus 5-dentatus, dentibus minutis late triangularibus acutis; corolla 6-7 mm. longa minute papillosa, tubo superne ampliato fauce fere 2 mm. lato, basi paullo ampliato, lobis ovalibus obtusis

1 mm. longis; stylus breviter exsertus; fructus didymo-globosus 4 mm. longus, 5 mm. latus, glaber, profunde sulcatus, costis obtusis. —Venezuela: Páramo Quirorá, State of Mérida, alt. 3,200 m., October 8, 1921, *Alfredo Jahn 704* (U. S. Nat. Herb. No. 1,120,196, type; duplicates in Gray Herb. and herb. N. Y. Bot. Gard.). Páramo del Morro, Mérida, 2,700 m., *Jahn 1064* (W). Páramo del Molino, 2,600 m., *Jahn 939* (W), *952* (W). Laguna Grande, Páramo Mucuchies, Mérida, 3,300 m., *Bellard 38* (W).

This shrub of the high paramos is related to *P. petiolaris* HBK. but that species differs in the larger, usually acute leaves on longer petioles, and in the thyrsoid inflorescence.

Palicourea Pittleri, sp. nov.—Frutex glaber 1.5-3-metralis, ramulis gracilibus teretibus viridibus laevibus vel striatis glabris, internodiis brevibus vel elongatis; stipulae in vaginam glabram truncatam 1-2 mm. longam connatae, vagina in lobos 4 triangulari-oblongos 1-2 mm. longos virides acutos erectos desinente; folia opposita, petiolo 2-4 mm. longo glabro; lamina anguste oblongo-lanceolata vel lanceolato-oblonga, 4.5-13 cm. longa, 1-4 cm. lata, apice longe sensimque acuminata, rarius acuta, basi acuta vel obtusa, anguste marginata, subcoriacea vel crasse papyracea, sub lucida, glabra, supra viridis, costa nervisque prominentibus, raphidibus minutis pallidis conspersa, subtus pallidior, costa gracili elevata, nervis lateralibus utroque latere c. 13, angulo lato adscendentibus, gracilibus, prominulis, arcuatis, marginem attingentibus, nervulis obsoletis; inflorescentia 1-3 cm. longe pedunculata cymoso-corymbosa, densa, pauci- vel multiflora, 1.5-4 cm. longa, 1.5-6 cm. lata, ramulis gracilibus adscendentibus minute puberulis; bractae subulatae 1-2 mm. longae; flores conferti subsessiles vel pedicellis usque ad 6 mm. longis stipati; hypanthium turbinatum glabratum 1 mm. longum; calyx 0.5 mm. longus, dentibus minutis inaequalibus obtusis vel acutis; corolla caerulea vel alba, extus glabra, infundibuliformis, 11-17 mm. longa, tubo superne paullo ampliato fauce 3 mm. lato, lobis triangulari-oblongis acutiusculis 3-3.5 mm. longis patentibus; antherae semiexsertae lineares 3 mm. longae; stylus inclusus; fructus ovoideo-globosus 5-6 mm. longus glaber niger vix sulcatus.—Venezuela: Silla de Caracas, Federal District, alt. 2,000-2,640 m., December 26-29, 1918, *H. Pittier 8346a* (U. S. Nat. Herb. No. 988,450, type). Colonia Tovar, 1,950 m., *Fendler 559* (G, M, K, Y); alt. 2,000 m., *Jahn 450* (W), *1203* (W). Upper belt of Pico de Naiguatá, Miranda, 2,400-2,765 m., *Pittier 6242* (W, Y). On high river margin, Lora River, Zulía, *Pittier 10948* (W, Y).

This is an isolated species, not very closely related to any other known from Venezuela or Colombia.

Psychotria Bolivariana, sp. nov.—Frutex 2-metralis, ramulis gracilibus teretibus dense breviterque lutescenti-pilosis, internodiis elongatis; stipulae persistentes breviter connatae fere ad basin

bifidae, lobis lanceolatis vel lineari-lanceolatis subulato-attenuatis erectis dense pilosulis; folia opposita, petiolo gracili 7-18 mm. longo dense hispidulo; lamina membranacea, lanceolato-oblonga, 7-13 cm. longa, 2.5-4 cm. lata, longe angustaque acuminata, acumine acuto, basi acuta vel obtusa, supra viridis, asperula, pilis lutescentibus hispidula, nervis non elevatis, subtus pallidior, undique hispidula, costa gracili elevata, nervis lateralibus utroque latere c. 8, gracilibus, prominentibus, angulo lato vel acuto adscendentibus, arcuatis, prope marginem conjunctis, nervulis prominentibus laxe reticulatis; inflorescentiae terminales et ex axillis supremis nascentes, 1-2 cm. longe pedunculatae, 1.5-4 cm. longae et latae, dense multiflorae, cymoso-paniculatae sed vulgo dense congestae et interdum subcapitatae, in fructu laxiores, floribus sessilibus vel breviter pedicellatis; bractae numerosae conspicuae lineari-attenuatae, plerumque 8-12 mm. longae, dense luteo-pilosulae, persistentes; hypanthium turbinatum dense pilosulum; calyx 4 mm. longus profunde 5-fidus, laciniis lanceolato-linearibus longiattenuatis dense pilosulis; corolla alba infundibuliformis 1 cm. longa, extus longiuscule pilosa, tubo superne dilatato fauce 2.5 mm. lato, lobis anguste triangularibus 2.5 mm. longis subacutis; stylus breviter exsertus; fructus niger ellipsoideus 5 mm. longus graciliter costatus dense pilosus.—Venezuela: Galipán, near the crest of Cerro de Avila, State of Miranda, alt. 1,800-2,400 m., May 20, 1913, *H. Pittier 6211* (Herb. Field Mus. No. 531,381, type; duplicates in U. S. Nat. Herb. and herb. N. Y. Bot. Gard.). Colonia Tovar, 1,950 m., *Fendler 550* (G, K, M). Cerro de Galipán, 1,350-1,800 m., *Eggers 13562* (F, W). Mountains near Galipán, *E. Pittier 180* (W, G, Y). Upper Catuche Wood near Caracas, 1,400 m., *Pittier 9582* (W). Caracas, *Birschel* (K). Colonia Tovar, *Moritz 841* (K).—Colombia: Mesa de los Santos, Santander, 1,500 m., *Killip & Smith 15365* (W, Y). Ocaña, 2,400 m., *Schlim 706* (K).

An easily recognized species because of the copious yellowish pubescence and abundant, conspicuous, narrow bracts.

***Palicourea Purpusii*, sp. nov.**—Frutex omnino glaber, ramulis validis subteretibus, internodiis elongatis; stipulae in vaginam truncatam 3-4 mm. longam adpressam connatae, vagina in lobos 4 triangulares 2.5-3 mm. longos acutos vel obtusos erectos persistentes desinente; folia opposita, longe petiolata, petiolo gracili 2.5-5 cm. longo; lamina crasse membranacea, oblongo-lanceolata vel ovato-lanceolata, 11-17 cm. longa, 3.5-5 cm. lata, longe sensimque acuminata, acumine angusto longe attenuato, basi acuta et interdum abrupte contracta et decurrens, in sicco nigrescens, nervis supra non elevatis, subtus vix pallidior, costa crassiuscula elevata, nervis lateralibus utroque latere 13-17, angulo lato adscendentibus, gracilibus, prominulis, arcuatis, prope marginem conjunctis; inflorescentia terminalis 10-14 cm. longe pedunculata, cymoso-corymbosa, c. 7.5 cm. longa et 9 cm. lata, dense multiflora, basi trichotoma vel radiatim ramosa, ramis adscendentibus, supra

interdum fastigiato-ramosa, bracteis oblongis acutiusculis c. 1 mm. longis persistentibus, pedicellis gracilibus plerumque erectis 10-13 mm. longis; fructus ovalis c. 6 mm. longus et 4.5 mm. latus obtuse costatus, basi et apice rotundatus, loculo altero saepe abortu.—Mexico: Shady forest, Zacuapam, Veracruz, May, 1928, C. A. Purpus 10110 (Herb. Field Mus. No. 602,907, type). Moist shady places, Zacuapam, April, 1927, Purpus 10101.

From Mexico there are known only two other species of this genus, *Palicourea Galeottiana* Mart. and *P. nigrescens* Mart. & Gal. The description of the latter species suggests its relationship with the present plant, but the stipule lobes of *P. nigrescens* are said to be linear-lanceolate, and the inflorescence subsessile and much shorter than the leaves.

Psychotria Machridei, sp. nov.—Frutex 1.5-2.5 m. altus, ramulis crassis subteretibus, novellis ferrugineis, vetustioribus cortice griseo vel brunneo rimoso obtectis, internodiis plerumque brevissimis; stipulae caducae ovato-triangulares 8-10 mm. longae vel longiores, subulato-acuminatae, tenues, ferrugineae, glabrae; folia opposita, petiolo crasso 8-12 mm. longo glabro; lamina crasse coriacea, obovato-oblonga vel elliptico-oblonga, 7.5-11 cm. longa, 2.5-4 cm. lata, longe et subabrupte acuminata, acumine acuto, basin versus longe angustata et decurrens, supra in sicco fusca, glabra, costa prominente, nervis obscuris, subtus pallidior, brunnescens, pilis gracilibus albidis patentibus undique sparse pilosa vel denique glabrata, costa gracili prominente, nervis lateralibus utroque latere c. 7, angulo acutissimo adscendentibus, gracilibus, leviter curvis, marginem attingentibus, nervulis obsoletis; inflorescentia terminalis vel pseudoaxillaris sessilis, e basi 2-4-ramosa, 2.5-4 cm. longa, ramis primariis simplicibus sparse puberulis, floribus fragrantibus sessilibus glomerulos paucos densos multifloros sessiles spicatum dispositos efformantibus; bractee triangulares acutae c. 1 mm. longae; calyx 1 mm. longus 5-dentatus puberulus vel fere glaber, dentibus late triangularibus obtusis vel acutis; corolla extus viridescens glabra infundibuliformis 5 mm. longa, lobis oblongis tubum aequantibus obtusis, intus densissime albo-barbatis; antherae oblongo-lineares subexsertae.—Peru: La Merced, alt. 1,200 m., August 27-September 1, 1923, J. Francis Macbride 5785 (Herb. Field Mus. No. 536,815, type; duplicate in U. S. Nat. Herb.).

This appears to be a very well-marked species, characterized by the thick pubescent leaves and spicate-paniculate inflorescence. It is related, probably, to *P. viridis* R. & P.

Psychotria araguana, sp. nov.—Frutex metralis, ramulis gracilibus teretibus viridibus glabris, internodiis elongatis; stipulae persistentes in vaginam viridem 1.5-2 mm. longam truncatam glabram connatae, vagina in lacinias 4 remotas triangulares acutas 1 mm. longas desinente; folia petiolata opposita, petiolo gracili 7-18 mm.

longo minutissime puberulo vel glabrato; lamina firme membranacea, ovato-oblonga vel lanceolato-oblonga, 10-15 cm. longa, 3-6.5 cm. lata, longe acuminata, acumine angusto attenuato apice obtuso, basi acuta vel obtusa et abrupte contracta, utrinque glabra, supra laete viridis, nervis non elevatis, subtus pallidior, costa gracili elevata, nervis lateralibus utroque latere c. 9, angulo acuto adscendentibus, gracilibus, subarcuatis, prope marginem conjunctis et interdum nervum collectivum distinctum efformantibus, nervulis prominulis laxe reticulatis; inflorescentia terminalis 4.5-8 cm. longe pedunculata, laxe cymoso-paniculata, multiflora, c. 7 cm. longa et 8 cm. lata, pedunculo gracili erecto glabro, ramis alternis glabris gracilibus late divaricatis vel saepius subrecurvis, dichotomis, remotifloris, floribus secus ramulos sessilibus solitariis vel fasciculatis, bracteis minutis et inconspicuis; hypanthium obovoideum glabrum 0.8 mm. longum; calyx 0.5 mm. longus breviter et obscure dentatus glaber; corolla roseo-alba extus glabra in alabastro apice rotundata, 5-6 mm. longa, tubo superne dilatato in fauce non barbato, lobis 5 oblongis obtusis adscendentibus intus minute papillosis; antherae subexsertae lineares 2 mm. longae.—Venezuela: El Portachuelo, on road from Maracay to Ocumare, Aragua, in humid forest, alt. 1,100 m., May 8, 1925, *H. Pittier 11828* (U. S. Nat. Herb. No. 1,232,708, type). San Juan de los Morros, Aragua, January 29, 1922, *Pittier 10126* (W).

In general appearance similar to *P. patens* Sw., but differing substantially in the form of the stipules as well as in the form and texture of the leaves.

***Psychotria Eggersii*, sp. nov.**—Frutex 1-1.5 m. altus, ramulis gracilibus teretibus, vetustioribus ochraceis laevibus vel rimosis, novellis dense et minute scaberulo-puberulis, internodiis brevibus vel elongatis; stipulae persistentes erectae vaginantes truncatae 1-2 mm. longae, dense scaberulo-puberulae, apice mucronatae; folia petiolata opposita, petiolo gracili 5-13 mm. longo dense puberulo; lamina firme membranacea, lanceolato-oblonga vel elliptico-oblonga, rarius elliptica, 4-11 cm. longa, 1-3.5 cm. lata, longe acuminata, acumine angusto longe attenuato interdum falcato apice obtuso vel subacuto, basin versus longe attenuata vel interdum abrupte angustata et decurrens, supra viridis, glabra, nervis non elevatis, subtus pallida, ad nervos dense minuteque puberula, costa gracili elevata, nervis lateralibus utroque latere c. 11, gracillimis, prominentibus, in sicco saepe rubicundis, angulo acuto adscendentibus, juxta marginem conjunctis, nervulis prominulis laxe reticulatis; inflorescentiae terminales 5-17 mm. longe pedunculatae, thyrsideo-paniculatae, dense vel laxe multiflorae, 2-5 cm. longae, 1-3 cm. latae, ramis basalibus oppositis, omnibus brevibus, divaricatis vel abrupte subreflexis, dense puberulis, floribus ad apices ramulorum congestis sessilibus vel brevissime pedicellatis, bracteis inconspicuis linearibus vel subulatis 1-1.5 mm. longis puberulis; hypanthium 0.6 mm. longum puberulum; calyx 0.5 mm. longus minute 4-dentatus, dentibus obtusis

vel acutiusculis; corolla alba in alabastro apice 4-corniculata, 5 mm. longa, extus sparse puberula, tubo gracili superne vix ampliato, ore non barbato, lobis 4 anguste oblongis subacutis tubo fere duplo brevioribus; antherae lineares exsertae 1-1.5 mm. longae; fructus subglobosus 3.5-4.5 mm. latus glaber, pyrenis dorso obtuse costatis.—Venezuela: High ridge north of Caracas, alt. 1,800 m., June 27, 1891, *Eggers 13187* (Herb. Field Mus. No. 580,339, type; duplicate in W). El Valle, June 25, 1891, *Eggers 13187* (W). Caracas, *Warming 164* (W). Cerros de Avila, Federal District, 1,600 m., *E. Pittier 27* (W, Y). Upper Catuche Wood, near Caracas, 1,400 m., *Pittier 9586* (W, Y), *7158a* (W). Colonia Tovar, 1,950 m., *Fendler 561* (G, K, M, Y), *561β* (G), *1984* (G, K).

Clearly a relative of the Colombian *P. amita* Standl., but the latter is distinguished by the form of the stipules, by the leaf pubescence, and by the smaller corolla.

***Psychotria guaremalensis*, sp. nov.**—Frutex, ramulis gracilibus teretibus viridibus glabris, internodiis 6-8 cm. longis; stipulae persistentes in vaginam glabram truncatam 2.5-4 mm. longam connatae, vagina in lacinias 4 lineari-subulatas 4-7 mm. longas virides erectas attenuatas desinente; folia breviter petiolata opposita, petiolo gracili 10-13 mm. longo supra sulcato glabro; lamina papyracea, oblonga vel oblongo-elliptica, 15-19 cm. longa, 5-8 cm. lata, longe acuminata, acumine angusto attenuato obtusiusculo, basi obtusa vel acuta, interdum abrupte contracta, glabra, pallido-marginata, supra viridis, costa et nervis prominentibus, subtus vix pallidior, costa gracili elevata, nervis lateralibus utroque latere c. 10, gracilibus, angulo lato adscendentibus, prominentibus, in marginem desinentibus, nervulis prominulis laxe reticulatis; inflorescentia terminalis 5-6 cm. longe pedunculata, laxe lateque cymoso-paniculata, 7-9 cm. longa, 8-11 cm. lata, multiflora, pedunculo gracili rigido erecto, ramis oppositis vel alternis gracilibus glabris vel sparse et minutissime puberulis, repetite dichotomis, ramulis remotifloris patentibus vel saepe recurvis, floribus sessilibus secundis, bracteis minutis inconspicuis; hypanthium glabrum 0.5 mm. longum; calyx 0.5 mm. longus glaber remote 4-denticulatus; corolla purpurascens extus sparse minuteque pilosula, 5 mm. longa, in alabastro apice 4-corniculata, tubo cylindraceo fauce non barbato, lobis 4 patentibus vel reflexis obtusis vel acutiusculis; antherae inclusae; stylus breviter exsertus.—Venezuela: Outskirts of forests along brook, Upper Guaremales, road from Puerto Cabello to San Felipe, State of Carabobo, July 28, 1920, *H. Pittier 8989* (U. S. Nat. Herb. No. 1,067,206, type; duplicate in Gray Herb.).

A close ally of *P. patens* Sw., but differing from that species in the broader inflorescence with much longer and more divided branches, and in the pubescent appendaged corolla.

Psychotria Lindenii, sp. nov.—Frutex, ramulis gracillimis subteretibus vel obtuse angulatis viridibus glabris, internodiis elongatis; stipulae persistentes in vaginam glabram truncatam 1.5-2 mm. longam connatae, vagina in lacinias 4 erectas lineari-subulatas 4-6 mm. longas attenuatas virides glabras desinente; folia fere sessilia opposita, petiolo 1-3 mm. longo glabro; lamina crasse papyracea, oblonga, ovato-oblonga vel oblanceolato-oblonga, 7-12 cm. longa, 2-4.5 cm. lata, longe acuminata, acumine angusto attenuato obtuso vel acuto, basi obtusa vel subrotundata, rarius basin versus angustata, glabra vel subtus ad nervos sparse et minutissime puberula, supra viridis, sublucida, costa elevata, nervis non elevatis, subtus paullo pallidior, interdum rubescens, costa gracili elevata, nervis lateralibus utroque latere c. 8, gracillimis, prominentibus, arcuatis, angulo lato adscendentibus, in marginem desinentibus, nervulis prominulis arcte reticulatis; inflorescentia terminalis 2-2.5 cm. longe pedunculata, cymoso-capitata, dense multiflora, c. 1.5 cm. longa et 2.5 cm. lata, pedunculo gracili erecto vel subrecurvo minute puberulo vel fere glabro; bractee lineares vel lanceolato-lineares 10-15 mm. longae, longe attenuatae, glabrae, obscure pinnato-nerviae, intimis paullo brevioribus; flores sessiles; hypanthium glabrum 0.8 mm. longum cylindraceum; calyx glaber 0.6-0.8 mm. longus 4-dentatus, dentibus triangularibus acutis; corolla extus glabra, tubo cylindrico 5 mm. longo fauce non barbato, lobis 4 reflexis oblongo-triangularibus 2 mm. longis intus glabris; antherae longe exsertae lineares 1.5 mm. longae.—Venezuela: "New Granada" (but probably from Venezuela), in 1842-43, *I. Linden 1419* (Herb. Kew., type). Río Canaguá, May 29, 1926, *Christ 22* (W).

A plant similar in most respects to *P. flavicans* Muell. Arg., of Brazil, but differing from that species in the nearly sessile leaves with broader bases, and in the narrower, more numerous bracts.

Psychotria racemifera, sp. nov.—Frutex decumbens 30-40 cm. tantum altus, basi radicans, pauciramosus, ramis teretibus gracilibus viridibus glabris, internodiis 2.5-6 cm. longis; stipulae persistentes in vaginam viridem truncatam glabram 2 mm. longam connatae, vagina in lacinias 4 erectas glabras subulatas 2-3 mm. longas attenuatas desinente; folia petiolata opposita, petiolo gracili 6-8 mm. longo supra sulcato glabro; lamina firme membranacea, elliptico-oblonga vel anguste elliptica, 5.5-10.5 cm. longa, 2-4 cm. lata, sensim vel subabrupte longiacuminata, acumine angusto attenuato obtusiusculo, basi acuta, conspicue marginata, margine pallido cartilagineo, glabra, supra laete viridis, costa pallida elevata, nervis prominulis, subtus pallida, costa gracili elevata, nervis lateralibus utroque latere c. 9, gracilibus, prominulis, arcuatis, angulo lato adscendentibus, in marginem desinentibus, nervulis obscuris laxe reticulatis; inflorescentia terminalis 2-3 cm. longe pedunculata, floribus sessilibus capitato-congestis, capitulis racemosis, racemo 6.5-7.5 cm. longo, rhachi obtuse angulata minute

puberula, capitulorum pedunculis 2-5 mm. longis crassis divaricatis, capitulis dense paucifloris bracteatis, bracteis exterioribus oblongis vel linearibus 2-5 mm. longis viridibus glabris, ceteris late ovatis obtusis c. 2 mm. longis obtusis viridibus ciliolatis adpressis; hypanthium glabrum, calyce 0.5 mm. longo glabro breviter dentato; corolla alba extus glabra infundibuliformis, in alabastro obtusa, 2.5-3 mm. longa, tubo obconico in fauce non barbato, lobis 4 ovatis obtusis tubo paullo brevioribus patentibus; antherae inclusae; stylus longe exsertus.—Venezuela: Along Río Lora, above Camp 2 of Perijá Exploration Company, Zulía, December 14, 1922, *H. Pittier 10958* (U. S. Nat. Herb. No. 1,187,493, type; duplicate in herb. N. Y. Bot. Gard.).

The shrub is noteworthy for its small size and for the conspicuously pale-margined leaves. The form of the inflorescence, consisting of an elongate raceme of small few-flowered green-bracted heads, is distinctive.

Rudgea apodantha, sp. nov.—Ramuli crassi subteretes ochracei glabri, internodiis brevibus; stipulae persistentes rotundato-ovatae 3-4 mm. longae glabrae, apice rotundatae et aculeolis paucis erectis rigidis glabris 5-6 mm. longis onustae; folia breviter petiolata opposita, petiolo 3-13 mm. longo crasso glabro supra sulcato; lamina crasse membranacea, obovato-oblonga, 11-20 cm. longa, 4.5-8 cm. lata, apice acuta vel plerumque obtusa et abrupte breviterque acuminata, acumine triangulari subobtusulo, basin versus sensim angustata, basi ipsa obtusa, supra viridis, glabra, costa impressa, nervis manifestis sed vix elevatis, subtus pallida, minutissime scaberula vel glabrata, costa gracili elevata, nervis lateralibus utroque latere c. 12, gracilibus, prominentibus, angulo lato adscendentibus, arcuatis, remote a margine conjunctis, nervulis prominulis laxe reticulatis; inflorescentia terminalis sessilis capitata pauciflora; drupa nigra lucida carnosula, obovoideo-globosa 12 mm. longa glabra apice depressa.—Venezuela: Near Colonia Tovar, alt. 1,200 m., 1856-57, *A. Fendler 1993* (Gray Herb., type; duplicate in herb. Kew.).

Well marked by the sessile headlike inflorescence.

Rudgea maypurensis, sp. nov.—Frutex 1.8-2.5 m. altus ramosus, ramulis crassis ochraceis vel griseis glabris subteretibus, internodiis 5-7 mm. longis; stipulae subpersistentes 3-4 mm. longae glabrae nitidae, apice subtruncatae et aculeolis paucis rigidis erectis 3-4 mm. longis onustae; folia subsessilia opposita, petiolo crasso vix 2 mm. longo; lamina rigide coriacea, elliptica vel elliptico-oblonga, 4.5-6.5 cm. longa, 1.5-3.5 cm. lata, obtusa vel acutiuscula, basi plerumque emarginata, supra viridis, lucidissima, costa impressa, nervis prominulis, utrinque glabra, subtus pallida, lutescens, costa gracili elevata, nervis lateralibus utroque latere c. 7, angulo acuto adscendentibus, gracillimis, prominulis,

subarcuatis, prope marginem conjunctis, nervulis obsolete, margine valde revolutis; inflorescentia terminalis 3-3.5 cm. longe pedunculata subcapitato-racemosa, 3-4 cm. longa et 3.5 cm. lata, ramis basalibus oppositis vel ternatis divaricatis validis angulatis glabris, bracteis lanceolatis vel oblongo-lanceolatis 3-6 mm. longis viridibus ciliatis, floribus ad apices ramorum dense capitato-congestis sessilibus; calyx 5-fidus, laciniis oblongis 1.5-2 mm. longis obtusis vel acutis ciliatis; drupa rubra subglobosa succulenta 6 mm. longa, apice depressa, glabra.---Venezuela: Maypures, in montibus graniticis frequens, June, 1854, *R. Spruce 3615* (Herb. Kew., type).

The very thick, conspicuously shining, and strongly revolute leaves enable one to recognize this species easily.

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SPERMATOPHYTES, MOSTLY PERUVIAN—II

J. FRANCIS MACBRIDE

In the preparation of a large part of this paper I have had the advantage of study at Berlin-Dahlem. The collections there are well known not only because of their extent but also because of their excellent organization, and their intrinsic scientific value is augmented by the freedom granted students. Many botanists from all parts of the world have had the pleasure and satisfaction of experiencing this when engaged in research at Dahlem. The fact is a truism; but in restating it I add with deep appreciation my own thanks to Professor Diels and to Professor Pilger, as well as to the curators of the different groups. The friendliness and interested helpfulness that, in a long sojourn, it has been my pleasure to know from all the members of the staff is acknowledged gratefully. In the library I have had the kind and efficient help of Miss Unruh, the librarian, and, in the herbarium, of Mr. Schulz-Korth, the assistant.

As indicated on the title-page I have the honor of including here descriptions of a number of new species by several of the botanists associated at Berlin-Dahlem. These are based, as are my own, upon the Peruvian collections obtained by Field Museum continuously since 1922 which now probably equal in extent but not in importance the great herbarium of the plants of that country at Berlin-Dahlem.

1. NEW SPECIES OF VARIOUS FAMILIES

Anthurium Schunkei K. Krause, sp. nov.—Caudex validus cataphyllis magnis fibroso-dilaceratis obtectus. Foliorum petiolus validus supra canaliculatus, circ. 2.5 dm. longus; lamina tenuiter coriacea utrinque glaberrima sagittiformis, usque ad 4 dm. longa, 2.5 dm. lata; lobus anticus anguste triangularis apice breviter acuminatus summo apice minute apiculatus, lobi postiei extrorsi rotundati sinu lato obtuso sejuncti quam anticus circ. sesqui brevioribus; nervi laterales 1 4-5 basales in costulas validas in sinu longe denudatas conjuncti, nervi costales 1 utrinque circ. 8-10 angulo 70-80° a costa patentes arcuatim adscendentes demum in nervum collectivum tenuem a margine 3-5 mm. remotum conjuncti. Pedunculus validus supra praecipue basin versus canaliculatus, circ. 3.5 dm. longus, basi 1.2 cm. crassus, sursum attenuatus, sed infra spatham reincrassatus. Spatha anguste oblonga apice circ. 1 cm. longa acuminata, 1.5 dm. longa, usque ad 3.8 cm. lata, in siccitate

obscure brunnea. Spadix stipite 7–8 mm. longo suffultus, anguste cylindricus, apice obtusus, leviter curvatus, 1.4 dm. longus, 6–9 mm. crassus. Tepala obtusa. Stamina filamenta dilatata. Ovarium breve stigmatibus oblongo vix elevato coronatum.—Peru: Dept. Junín in Chanchamayo Tal., um 1,200 m. (*C. Schunke 293*; bl. Jan.).

Die Art schliesst sich an *Anthurium cabrerense* Engl. an, doch sind bei letztem die Spathen breiter, mehr eiförmig bis lanzettlich und im Verhältnis zum Kolben länger; ausserdem ist die Zahl der Blattnerven verschieden.

***Anthurium gracilipedunculatum* K. Krause, sp. nov.**—Caudiculus scandens ramosus, internodiis 3–6 cm. longis, 3–4 mm. crassis. Cataphylla anguste lanceolata acuta, internodia includentia, 3–5 cm. longa, diu persistentia. Foliorum petiolus tenuis basi vaginatim dilatatus quam lamina paullum brevior, 5–7 cm. longus, circ. 2 mm. crassus, geniculo 6–7 mm. longo paullum incrassato praeditus, supra canaliculatus; lamina coriacea oblongo-vel elongato-lanceolata apice breviter cuspidulata, basi obtusa vel rotundata, 8–11 cm. longa, usque ad 4 cm. lata, nervis lateralibus 1 quam secundarii paullum crassioribus a costa validiuscula supra paullum impressa subtus distincte prominente patentibus in nervum collectivum a margine 3–4 mm. remotum conjunctis. Pedunculus gracilis elongatus saepe curvatus, 1.2–1.6 dm. longus, vix 1.5 mm. crassus. Spatha obscure rubra anguste lanceolata apice longe acuminata basi amplexa, 4–5 cm. longa, usque ad 5 mm. lata. Spadix tenuis anguste cylindricus obtusus, ut spatha obscure ruber, 4–7 cm. longus, 3–4 mm. crassus, stipite tenui 3–3.5 cm. longo ultra spatham longe exserto suffultus. Tepala breviter obtusa. Filamenta spathulata. Ovarium late ovoideum in stilum brevem contractum.—Peru: Bei Yanano, in Wäldern, um 1,800 m. (*Macbride 3734*; bl. Mai, 1923).

Die Art steht dem aus Colombia beschriebenen *Anthurium pulchellum* Engl. sehr nahe, weicht aber von ihm dadurch ab dass die Blattstiele im Verhältnis zu dem Spreiten erheblich länger sind; ausserdem sind die Blätter breiter, die Spathen länger und nicht grünlichbraun, sondern dunkelrot gefärbt.

***Anthurium siccisilvarum* K. Krause, sp. nov.**—Caudex assurgens, usque ad 6 dm. longus, internodiis brevibus 3–5 cm. longis; cataphylla linearia mox fibroso-decomposita. Foliorum petiolus tenuis, supra canaliculatus 3.5–4.5 dm. longus, basi 5–7 mm. crassus sursum paullum attenuatus, geniculo circ. 1.5 cm. longo modice incrassato praeditus; lamina coriaceo-herbacea, hastato-triloba, 3 dm. longa vel ultra et subaequilata, lobis posticis patentibus oblongis rotundatis, paullum recurvis, 5–6 cm. latis, lobo antico obovato-lanceolato apice breviter acuminato, basin versus angustato, costis posticis valde divergentibus sinu obtusissimo sejunctis longe denu-

datis, nervis lateralibus pluribus utrinque distincte prominentibus a costa arcuatim adscendentibus prope marginem nervo colectivo tenui paullum distante conjunctis. Pedunculus tenuis 2-3 dm. longus. Spatha lineari-oblonga apice acuminata, basi paullum decurrens, 6-7 cm. longa, 7-8 mm. lata. Spadix stipite tenui circ. 1.5 cm. longo suffultus, anguste cylindricus, apice rotundato-obtusius, leviter curvatus, circ. 1 dm. longus, 5-7 mm. crassus, sursum paullum attenuatus. Tepala oblonga. Stamina filamenta sublinearia. Ovarium late ovoideum in stilum brevem conoideum attenuatum.—Peru: Bei Muña zwischen Felsen in trockenen Wäldern, um 2,300 m. (*Macbride 4048*; bl. Mai, 1923).

Die Art sieht dem aus Colombia beschriebenen *A. denudatum* Engl. recht ähnlich, doch sind die Mittellappen der Blätter nicht lanzettlich sondern mehr verkehrt-eiförmig und noch dem Grunde hin deutlich verschmälert.

Anthurium Macbridei K. Krause, sp. nov.—Caudex scandens. Cataphylla magna triangulari-lanceolata longe acutata fibrosa-dilacerata. Foliorum petiolus semiteres supra canaliculatus, usque 1.5 m. longus; lamina coriaceo-herbacea elongato-cordiformis, apicem versus sensim angustata, summo apice in cuspidem acutam angustam 2-2.5 cm. longam contracta, basi rotundata, in toto usque ad 9 dm. longa, 7 dm. lata; lobus anticus quam postici circ. duplo longior, nervis lateralibus primariis 6-8 supra prominulis vel paullum impressis subtus distincte prominentibus inter se venis tenuioribus reticulatis conjunctis demum in nervum collectivum a margine 4-8 mm. remotum exeuntibus percursus; lobi postici rotundati sinu lato obtuso sejuncti, costis posticis in sinu 6-8 cm. vel ultra denudatis. Pedunculus teres, 6-8 dm. longus, basi circ. 1.5 cm. crassus sursum attenuatus. Spatha anguste oblonga apice subacuminata 1.5-2 dm. longa, 4-6 cm. lata. Spadix brunneo-purpureus stipite 1.5 cm. longo spathae paullum adnato suffultus, anguste cylindricus, apice rotundato-obtusius, 2-3 dm. longus vel fructifer longior, 1-2 cm. crassus sursum attenuatus. Tepala late oblonga obtusa. Pistilla subovoidea stigmatibus rotundato paullum elevato coronata.—Peru: Huacachi bei Muña um 2,150 m. (*Macbride 4110*; bl. und fr. Mai, 1923).

Verwandt mit *A. corallinum* Poepp., doch sind die Blätter breiter und grösser und die Spathen nicht linnearlanzettlich sondern mehr länglich.

Sisyrinchium palustre Diels, sp. nov.—Humilis, fibris vetustis nullis. Caulis ex axilla folii sui egressus quasi lateralis, nudus, anceps, 3-6 cm. longus, apice subspatha geniculatus. Folia rosulato-conferta, herbacea, basi latissima vaginantia, ibique hyalino-marginata; apicem versus sensim angustata acuta, 3-7 cm. longa. Spatha circ. 1.5 cm. longa, folium inferum acutum, superiora breviora, hyalino-marginata. Flores 2-5, pedicellati, pedicellis gracilibus ad 1 cm.

exsertis. Petala lutea. Stamina praeter basin libera.—Peru: Chasqui, in paludibus subalpinis, flor. 10 April, 1923 (*Macbride 3308*; Typus speciei!).

Differt a *S. Jamesonii* Bak. affini collo non fibroso, foliis basi latis herbaceis, a *S. trinervi* Bak. staminibus vix connatis.

Weberbaueria spathulifolia (Gray) O. E. Schulz, var. **integri-folia** O. E. Schulz, var. nov.—Omnia folia integra vel vix dentata.—Peru: In rocks, uplands, Río Blanco, May 8 19, 1922, *Macbride & Featherstone 811* (Type, Field Museum).

Sisymbrium oleraceum O. E. Schulz.—Adde descriptioni speciei in Engler, Das Pflanzenreich Heft 86. (1924) 74: Planta fructifera 0.55 m. alta. Siliquae in pedicellis 15 12 mm. longis rectangule patentibus sursum curvatae, lineares, 4-4.5 cm. longae, subcompressae, 1.5 mm. latae, stylo 1 mm. longo coronatae; valvae basi obtusae, apice acutae, trinerves. Semina uniseriata, oblonga, 1.5:0.7:0.33 mm., dilute brunnea, laevia.—Peru: Huancalli, Dept. Cuzco, *Pennell 13714*.

Sisymbrium Weberbaueri O. E. Schulz, sp. nov.—Planta suffruticosa, 30 cm. alta, pruinosa. Caulis breviter flexuosus, densiuscule foliosus, superne ramosus, ima basi pilis simplicibus rigidulis parce obsitus; rami erecto-patentes. Folia caulina inferiora mediaque pinnatipartita, 3-4-juga, basi semiamplexicaulia, lobis linearibus acutiusculis integris terminali elongato lateralibus a rhachi latiuscula subrectangule patentibus inter se remotis et inaequilongis imis minutis, infima disperse pilosa et apice loborum setulosa; folia superiora angustiora, linearia, remote dentata vel integra, basi biauriculata. Racemus florifer laxiusculus, 10 20-florus. Pedicelli erecto-patentes, 7-5 mm. longi. Sepala suberecta, fere 5 mm. longa, oblonga, apice obtusa, pallide viridia, late hyalino-marginata, interiora basi parum saccata. Petala alba, 8 mm. longa, anguste obovato-cuneata, apice subtruncata. Stamina 5.5-6 mm., antherae 1.8 mm. longae. Glandulae nectariferae laterales semiannulares, cum medianis torosis confluentes. Pistillum anguste cylindricum; ovarium ovulis ca. 60; stylus 1 mm. longus; stigma majusculum, capitatum, tandem, subbilobum.—Peru: In rocks between Moquegua and Torata, Prov. of Moquegua, 1925, *Weberbauer 7426* (Type, Field Museum).

Nota. Ad sectionem *Amerophyllum* Fourn. pertinet. Inter affines foliis pinnatipartitis et pilis simplicibus excellit. Siliquae desiderantur.

Dr. Weberbauer noted a white wax which apparently is deposited by some agent on the fleshy leaves.

Cremolobus Paysonii O. E. Schulz, sp. nov.—Herba annua, ca. 20 cm. alta. Caulis erectus, acutangulus, glaber, superne ramosus; rami erecto-patentes. Folia caulina inferiora in specimene

unico fructifero nulla (desiccata), superiora oblanceolata, acuta, basin versus cuneatim angustata, utrinque dentibus 2-4 inaequalibus grosse dentata vel subpinnatifida, glabra. Racemus 20-40-florus. Sepala 2 mm. longa. Petala paulo longiora. Racemus fructifer densiusculus. Fructus in pedicellis patulis 4-8 mm. longis, gynophoro 1.2 mm. longo et stylo aequilongo praediti, didymi; fructus partialis orbicularis, 4 mm. diam., centro pilosus, ala lata margine ciliolata et irregulariter obtuse dentata vel sinuato-repanda cinctus.

A *C. chilensi* DC. fructibus majoribus alis latoribus dentatis (nec integris) circumdati differt.—Peru: Moist swales on northern mountain side, Matucana, Dept. of Lima, April 12-May 3, 1922, *Macbride & Featherstone 211* (Type, Field Museum).

The white flowers of this little annual were rather conspicuous. Its name is in memory of Edwin Blake Payson.

Descurainia Macbridei O. E. Schulz, sp. nov.—Hibernanti-biennis. Caulis erectus, sub anthesi 0.20-0.60 m. altus, a basi longe ramosus, dense foliosus, pube ramosa substellata brevi densa canescens; rami suberecti. Folia pro rata minuta, bipinnatisecta; basalia desiccata; caulina inferiora breviter petiolata, ambitu oblongo-elliptica, 6-8-juga, lobis ovatis lateralibus alternantibus superioribus subdecurrentibus mediis sessilibus inferioribus breviter petiolulatis lobulis utrinque 3-4 obovatis obtusis superioribus integris inferioribus saepe unidentatis instructis; caulina superiora subsessilia, subconformia, sed lobulis acutiusculis; omnia pube caulis oblecta, incana, 6-1.5 cm. longa, 1.6-0.8 cm. lata. Racemus initio densissimus et capitiformis, dein elongatus, usque 130-florus. Pedicelli 2-4 mm. longi. Sepala 2 mm. longa, late oblonga, obtusa, ad apicem obscure purpurea. Petala 3 mm. longa, pallide flava, anguste obovato-cuneata. Stamina 1.8-2 mm.; antherae 0.25 mm. longae. Ovarium ovulis ca. 40. Siliquae breves, in pedicellis 8-3 mm. longis axi plus minusve adpressae, breviter oblongae, apice obtusiusculae, 6-7 mm. longae, 1.5-1.8 mm. latae, stigmatibus sessili coronatae, viridulae; septum saepe fenestratum. Semina oblongo-ellipsoidea, 0.6 mm. longa.—Haec planta pulchra est quasi intermedia inter *D. myriophyllam* (Willd.) R. E. Fries et *D. athroocarpam* (Gray) O. E. Schulz; a *D. myriophylla* racemo multo densiore et siliquis brevioribus et foliis minoribus, a *D. athroocarpa* habitu majore et racemo elongato recedit.—Peru: In rock crevices and on bunch-grass slopes, Huaron, Dept. of Junín, June 12, 1922, *Macbride & Featherstone 1121* (Type, Field Museum).

Nectandra Macbridei O. C. Schmidt, sp. nov.—Arbor pauciramosa ca. 20-pedalis. Rami hornotini tomentelli, vetustiores cortice griseo leviter striato-canaliculato. Folia petiolis 1.5-1.8 cm. longis, crassis, supra canaliculatis (interdum tomentellis); lamina anguste elliptica vel lanceolata, 19-42 cm. longa et 6-16 cm. lata, apice angustata, acuminata, basi angustata, acuta, supra subtusque glabra

(juniora dense brevi-pilosa), supra nitida, subtus opaca, coriacea; nervus medius supra impressus, subtus prominens; nervi laterales utroque latere mediani 15–19 sub angulo ca. 40–50° rarius 60° abeuntes supra leviter impressi, subtus prominentes, cum nervo medio reti supra vix subtus tenuiter modo conspicuo conjuncti. Inflorescentiae paniculae amplae axillares, multiflorae, tomentellae; flores in cymis conferti. Flores extus tomentelli plus minusve 5 mm. longi; lobi subovales, plus minusve 2.2 mm. longi apice leviter acuminati, tubus subobconicus obsolete modo conspicuus vix 1 mm. longus; stamina ser. exteriorum rotundato-subquadrata, plus minusve 0.8 mm. longa, obscure modo (vix 0.1 mm. longe) stipitata, apice mucronulata, ser. III. basi glandulis binis magnis aucta; ovarium subglobose plus minusve 0.8 mm. longum, glaberrimum, apice in styium plus minusve 0.8 mm. longum stigmatibus obtusis contractum.—Peru: Río Huallaga Canyon, below Río Santo Domingo, alt. about 4,000 feet, in 1923, *J. F. Macbride 4228* (Type, Field Museum).

Die Art ist nach Mez' Übersicht verwandt mit der auch in Peru vertretenen *N. pulverulenta* Nees, die sich durch bedeutend grössere Blüten (9 mm.) mit scharf abgesetztem, krugförmigem Tubus auszeichnet. Zudem besitzen deren stark bereifte Blüten einen Griffel der doppelt so lang als das ovarium ist. Endlich sind die Infloreszenzen von *N. pulverulenta* im Verhältnis zu denen von *N. Macbridei* nur armbütig. Die Nebenachsen der Infloreszenzen von *N. Macbridei* sind Dichasien, mit oft nur verkümmerten oder fehlenden Endblüten.

Cedrela Weberbaueri Harms, sp. nov.—Arbor, ramulis puberulis vel pubescentibus, juvenilibus dense velutinis; folia pinnata, rhachis cum petiolo circ. 5–7 cm. longo dense velutino-tomentella, circ. 10–20 cm. longa, tenuis, foliola 3–4-juga, opposita, brevissime petiolulata, ovato-oblonga vel late oblonga vel ovata, basi saepissime obliqua subito in petiolulum latere postico breviorum quam antico circ. 2–5 mm. longum contracta, apice saepe breviter acuminulata, vel obtusiuscula, supra sparsius velutino-pubescentia, subtus dense tomentella, 5–9 cm. longa, 4–6 cm. lata; foliola in specimine Macbrideano multo majora, basi potius oblique late rotundata, supra sparsius pilosula, subtus laxius tomentella, 6–16 cm. longa, 5–9 cm. lata; inflorescentiae rhachis in specimine Macbrideano dense velutina; capsula breviter crasse pedicellata, valvae 5–5.5 cm. longae, 1.2–1.5 cm. latae, parce lenticellatae, columna 4–4.5 cm. longa, semina deorsum late alata, 2–2.5 cm. longa vel ultra.—Peru: Dept. Huancavelica, Prov. Tayacaya, 11° 55' S., linke Talwand des Flusses Mantaro zwischen Huancamayo und San Gregorio, Savanne, 1,700–1,800 m., *Weberbauer 6568*; 5. IV. 1913; nur Blätter; 3 m. hoher Baum, gelegentlich höher. Yanano, Dept. Huánuco, *Macbride 3800*; V. 1923; etwa 10 m. hoher Baum, mit Früchten.

Die von Weberbauer angegebenen Früchte sind verloren gegangen; daher konnte sein Exemplar bisher nicht benannt werden. Das

Exemplar von Macbride hat Früchte; es stimmt in der Form und Behaarung der Blätter gut mit dem Exemplar von Weberbauer überein, nur dass Macbride ein älteres grösseres Blatt gesammelt hat. Die Art ist bemerkenswert durch die relativ breiten stark behaarten Blätter. Vorläufig ist es nicht möglich, ihre Beziehungen zu den bekannten Arten anzugeben, da die Blüten fehlen.

UEBER DIE RHAMNACEEN GATTUNG SCYPHARIA MIERS

A. WEBERBAUER

Als ich die Rhamnaceen für Engler-Prantl, Natürl. Pflanzenfam. bearbeitete, stand mir kein Material von *Scypharia* zur Verfügung. Daher liess ich diese Gattung, Miers und Bentham-Hooker folgend, als zweifelhaft bei den *Colletieae*. Später hatte ich im Küstengebiete Perus oft Gelegenheit, die dort häufige *Scypharia senticosa* (HBK.) Miers an ihren Standorten zu untersuchen und stellte fest, dass dieser Strauch niemals seriale Beispresse bildet (was übrigens auch aus den Tafeln von Miers zu erkennen ist), somit nicht zu den *Colletieae* gehören kann. Aus Herbar-Studien ergab sich, dass *Scypharia senticosa* in die Gattung *Scutia* §II *Orthacantha* zu stellen ist. Somit werden folgende Namensänderungen notwendig.

Scutia spicata (Willd.) Weberbauer, comb. nov. *Colletia spicata* Willd. ex R. & S. Syst. 5: 513. 1819. *Rhamnus senticosa* HBK. Nov. Gen. & Sp. 7: 42. 1825. *Sageretia senticosa* Brongn. Ann. Sci. Nat. 10: 360. *Scypharia senticosa* Miers, Contrib. 1: 301, u. Taf. 42. *Scutia maritima* Perkins, Engl. Bot. Jahrb. 45: 464. 1911.

Dieser immergrüne, bis 3 m. hohe Strauch ist von Süd-Ecuador bis Süd-Peru (Gegend von Chala) charakteristisch für das trockene Küstenland. Er bildet oft kleine Bestände für sich allein und gehört zu jenen Holzgewächsen, deren tiefgehende Wurzeln das Grundwasser erreichen. Seine verticale Verbreitung ist am ausgedehntesten in Centralperu, wo sie bis 1,600 m. aufwärts reicht. Das Volk nennt ihn "lipe" in Nordperu (Gegend von Piura) und "muchilco" in Sudperu (Gegend von Chala).

Scutia guayaquilensis (HBK.) Weberbauer, comb. nov. *Rhamnus guayaquilensis* HBK. Nov. Gen. & Sp. 7: 55. 1825. *Rhamnus decussatus* R. & P. in herb. Lambert. *Sageretia guayaquilensis* Brongn. Ann. Sci. Nat. 10: 360. *Scypharia guayaquilensis* Miers, Contrib. 1: 300, u. Taf. 42.

Unterscheidet sich von der vorgenannten durch die Form der Blätter.

Scutia pauciflora (Hook. f.) Weberbauer, comb. nov. *Discaria pauciflora* Hook. f. Trans. Linn. Soc. 20: 229. 1851. *Scypharia parviflora* Miers, op. cit. 301 u. Taf. 42. *Discaria parviflora* Hook. f. ex Miers, l. c.

Unterscheidet sich von *S. spicata* durch die gestielten Blüten.

Ausser den drei genannten Arten der Gattung *Scypharia* beschreibt Miers (op. cit. 302 u. Taf. 42) noch eine vierte, für ihn zweifelhafte Art: *Scypharia tetragona*. Diese Pflanze halte ich für identisch mit der Verbenacea *Citharexylon spinosum* HBK.

Die Gattung *Scypharia* ist somit zu streichen.

Ich möchte noch hinzufügen, dass bei *Scutia spicata* ebenso wie bei der ihr nahe verwandten *S. arenicola* (Casar.) Reiss. die Blüten einen dünneren Discus haben als bei *S. buxifolia* Reiss.

2. LEGUMINOSAE, ESPECIALLY OF THE GENERA PAROSELA AND PSORALEA

Parosela.— Since the publication of a tentative key to the South American perennial species of *Parosela* or *Dalea* (Field Mus. Bot. 4: 100. 1927), I have seen additional material, including the many types in the herbarium at Berlin-Dahlem. It may now be recorded that, in general, the presence or absence of pubescence, especially in the inflorescence, is not always as significant as has appeared, since several species possess this "character" in varying degree. Others, on the other hand, at least so far as known, exhibit it with constancy. Obviously, a larger series of specimens is needed to determine surely the validity or true character of many species, but the nature of the calyx lobes, the size of the flowers, the number of leaflets, the persistence of the bracts, and the degree of pubescence on the mature leaves are usually "constant" and therefore diagnostic characters. Often important, also, are the color of the flowers and the habit of the plant.

A realignment of the species, with the recognition of several as only varieties, may await the possible action of the next botanical congress in determining finally the name for the group. Apparently the sponsors of the International Rules favor, in this, as, curiously enough, in some other cases,¹ a technical interpretation of the Rules that will result in a complete overthrow of established nomenclature, illogical and inane though such action is. I have already called attention to the technicalities involved (Field Mus. Bot. 4: 5. 1927).

¹Cf. Journ. Wash. Acad. Sci. 19: 247-252. 1929.

Parosela nova (Ulbrich) Macbr. Field Mus. Bot. 4: 110. 1927.

This species, which I knew only from description, was incorrectly interpreted. It resembles *P. boliviana*, but is probably distinguishable by the very short calyx teeth, which are hidden in the dense calyx pubescence. Furthermore, in habit it is surprisingly like the shrubby *Dalea samancoensis*, included, at least in a broad sense rightly, in *P. cylindrica*.

Parosela calocalyx (Ulbrich) Macbr., op. cit. 104, is, I think, not distinguishable specifically from *P. cylindrica*. The bracts and calyx in the type specimens vary from glabrous to slightly pubescent.

Parosela microphylla (HBK.) Rose, Contr. U. S. Nat. Herb. 10: 106. 1906.

From the Humboldt specimen, in the Willdenow Herbarium, of this obscure but well-named species, it is apparent that the plant was definitely shrubby, probably sprawling. Its leaflets are one to rarely two mm. long, only two to four pairs, obovate, retuse, and glabrous to lightly pubescent. The spikes are cylindrical-oblong but only 1–1.5 cm. long; calyx densely hairy, the ovate-lanceolate-acuminate teeth at least one-half the length of the tube; bracts pubescent; flowers broken but apparently 6–7 mm. long. In my key it would be sought with *P. humifusa*, *P. catatona* and *P. peruviana*. Its tiny leaflets separate it from the first and last, and its habit, fewer leaflets, and more numerous flowers from *P. catatona*.

Parosela exilis (DC.) Macbr. Field Mus. Bot. 4: 103. 1927, is probably the earlier name for *P. vicina* Macbr., l. c. Dr. I. M. Johnston has very kindly examined for me the type of the former, and from his detailed description and sketch its identity seems certain. The unusual character of diverse bracts in the same head which DeCandolle emphasized as important and upon which I accordingly maintained the species, proves to be an abnormal development in one inflorescence only, in which the lower flowers have aborted. Their bracts, however, have developed, and, with revolute margins, they at least appear to be lance-revolute, while those subtending the flowers are obovate-rotund and abruptly caudate, as in the other inflorescence. The diverse bracts are, therefore, as Johnston remarks, "accidental." My variety *brevis* of *P. microphylla* is also to be referred to this species (that is, to *P. vicina*). Two sheets of *Weberbauer 6350* in Herb. Berol., upon which specimens the latter was based, are, in part, entirely glabrous.

Dalea tapacariensis Harms ex Kuntze, Rev. Gen. 3: 59. 1898.

I referred this, doubtfully, to *Parosela pazensis*. The type is a very young plant, but I think it is more nearly allied to *P. peruviana*. It has, however, very different calyx teeth, as they are linear-subulate and scarcely 0.5 mm. long. *Dalea retusifolia* Harms, l. c., is *P. boliviana* as I suggested, op. cit. 106.

Parosela astragalina (HBK.) Killip, Field Mus. Bot. 4: 109. 1927.

This is certainly not distinguishable from *Dalea Mutisii* and, presumably then, from *P. coerulea*. The characters relied upon by me to separate these forms break down completely in any considerable series of specimens. The closely related *P. ayaracensis* is fairly well marked, but chiefly by its larger flowers and consequently thicker spikes. As in *P. coerulea*, the degree of calyx pubescence (to its complete absence) is here of no taxonomic significance. *Dalea cutervoana* Szysz. in Rozpr. Akad. Uniej. Krakov. Ser. 2. 9: 221. 1895, not included in my key, is also, from description, referable to *P. coerulea*. It was based on *Jelski 224* from Cutervo, Cajamarca, Peru.

Psoralea.—The opportunity to study the large African collections of this genus in the herbarium at Berlin-Dahlem has enabled me to consider further the matter of generic limitation for the group, an undecided problem (from my viewpoint) since Dr. Rydberg's segregation (N. Am. Fl. 24. 1919). Although in 1922 (Contr. Gray Herb. 55: 14, and again in Field Mus. Bot. 4: 86. 1925) I questioned the expediency of his treatment, I had not seen any considerable number of Old World species. In the meantime Dr. Rydberg has presented a discussion of his segregation (Journ. Am. Bot. 15: 196–203. 1928), which shows clearly the complete dovetailing of the characters of fruit with all the others proposed by him as having value for purposes of generic definition.

However, I still hoped that possibly there was a natural division basable on the single salient group character, viz. the adherence or non-adherence of the pericarp to the seed. The dehiscence or non-dehiscence of the fruit is, of course, merely a manifestation of this unit character. But, as Rydberg himself shows, the character is not uniformly well-marked when all species are considered. In *Hoita*, as he suggests, the pod may surely dehisce finally, and species like *Psoralea spicata* and *P. caffra* are doubtfully assignable to any of the segregates as yet proposed. Other Old World species which

possess further perplexing combinations of characters—to mention only a few—are: *P. obtusifolia*, *P. acaulis*, *P. drupacea*, *P. patens* and *P. plicata*, *P. foliosa*, *P. tomentosa* and *P. Zeyheri*.

The persistence and enlargement of the style is sometimes a striking development, but unfortunately it is associated with both dehiscent and indehiscent fruits; and in the case of the former the dehiscence itself varies from valvate to irregular, so its significance as a character is obviously unimportant. Then, too, the style, when persistent, develops in greatly varying degree; cf. *P. cuspidata*, with a scarcely recognizable “beak,” as such. And there is much variation in the pod elsewhere in the genus.

Therefore the problem resolves itself into an interpretation of the value of certain characters for purposes of generic limitation, and as such an analysis is, of necessity, largely a matter of personal opinion, the foregoing remarks are not to be construed as in disapprobation of the sincere work of a botanist whose basic viewpoint is, to begin with, entirely at variance with mine.

Psoralea, in the generally accepted sense, is a genus fortunately much better marked than many in its family, but as is so often the case with such genera, it has within itself characters which suggest the feasibility of segregation. However, as Dr. Rydberg himself predicts, more genera than already recognized by him must be “created” if his work is accepted, for truly the characters carefully designated by him occur in many more “combinations.” To me it seems unsatisfactory to give generic value to characters which result in segregation, or, for that matter, in union of groups, beyond the bounds of practical convenience. In thus permitting taxonomy to serve a useful purpose for all students of plants, regardless of their special field, one does not sacrifice the indication of the apparent relationships, for sectional groupings serve the same purpose as microscopic genera, with none of the obvious disadvantages of the latter.

The genus *Psoralea* is not as richly represented in South America as I thought in 1925 when few specimens other than my own were at hand for study. It is now evident that the characters relied upon then to distinguish several species are not all constant. However, eight or ten species, fairly well supported by geographic factors, are recognizable unless one wishes to go so far as to include in the typically and probably strictly Chilean *P. glandulosa* such diverse and long-accepted entities as *P. mexicana*, *P. lasiostachys*, and *P. pubescens*. Surely it is not satisfactory to treat these as mere sub-

species of *P. glandulosa*, which is uniformly and reasonably well marked by its much greater smoothness throughout, its abundant glandulosity, and its small to medium-sized flowers. However, the following changes in the alignment of several species should be made.

***Psoralea lasiostachys* Vog. var. *potens* (Macbr.), comb. nov.**
P. potens Macbr. Field Mus. Bot. 4: 85. 1925. *Hoita versicolor* Rusby, Mem. N. Y. Bot. Gard. 7: 259. 1927.

In its extreme development this plant is readily distinguishable from the typical form of the species, of more southern distribution, by its congested and inordinately stipitate-glandular inflorescence, but in a series of specimens these differences are not always well defined or even concomitant. I misinterpreted, op. cit. 86, the type of *P. lasiostachys*, which is exactly matched by *P. remotiflora* Macbr., op. cit. 113, and nearly by *P. Featherstonei* Macbr., op. cit. 84, *P. yurenensis* Rusby, Bull. N. Y. Bot. Gard. 6: 511. 1910, and *Hoita hirsuta* Rusby, Mem. N. Y. Bot. Gard. 7: 260. 1927. The following specimens represent the variety *potens*: Peru: Dept. of Lima, *Weberbauer 174*. Dept. of Junín, *Weberbauer 2342*; *Macbride & Featherstone 1022*. Dept. of Cuzco, *Herrera 371*, 625.—Bolivia: *Herzog 2090*. La Paz, *Buchtien 33*, *Seler 94*, *Hauthal 304*. Cotana, *Buchtien 170*.

Psoralea mexicana (L. f.) Vail (*P. Mutisii* HBK.), *P. maleolens* Macbr., *P. divaricata* Willd., *P. munyensis* Macbr., and presumably *P. Trianae* Vail (to judge from the meager description) comprise a group of species distinct from *P. glandulosa* by the densely pubescent calyces, and from all other species by the much smaller flowers—about 6 mm. long—except *P. huigerilla* of Argentina, which also has small flowers but a very different beaked fruit. *P. divaricata* Willd. Enum. 2: 788. 1809 has almost shaggy-villous white-pubescent branches and calyces, flowers scarcely 6 mm. long (about half longer than the calyx), distinctly pedicelled and very openly borne in short racemes, and glabrous, oblong-lanceolate, acutish leaflets. It appears to be very distinct. It is known only from Guancabamba, collected by Humboldt. *P. Trianae* Vail, Bull. Torr. Club 21: 119. 1894, seems to be represented by *Lehmann 4790*, 6266, and 4580 from Ecuador, and by *Weberbauer 4240* from northern Peru. Its narrow, acuminate leaflets and thick, dense inflorescences serve to distinguish it readily from *P. munyensis*, which it most resembles. The latter is well represented, in addition to the type, by *Weberbauer 3197* from the Dept. of Ancash, Peru. The relationships of *P. maleolens* and *P. mexicana* have, I think, been correctly indicated.

The former is nicely distinct from even the smaller-flowered races of *P. glandulosa* by its sessile glands, hirsute calyx, and dark purple, subsessile flowers. It was previously collected in Peru by Dombey, 854. The latter is known only from Colombia and Ecuador, and its peculiar pubescence is uniformly distinctive.

Psoralea marginata Meyen, Reise 1: 436, 1834, is to be referred to *P. pubescens* Pers. Syn. Pl. 2: 347. 1807, as the characters used by me, op. cit. 86, do not hold. The flowers of the type of Meyen's species are actually of medium (about 10 mm. long) size. *Weberbauer 15* from Chorrillos, Lima, is an additional specimen. The branchlets and petioles are densely downy-white-pubescent.

In spite of this generous reduction of names, it seems necessary to add another species to the list, as the plant described below agrees in no very definite way with any of the accepted species. It differs from true *P. glandulosa* in its densely loose-pubescent and short calyx and in its nearly complete lack of the glands which are so abundant on the branchlets and petioles of that species. It is distinguished from all other species, and also from *P. glandulosa*, by the long-pedicellate and recurved flowers. A tendency toward this latter character is sometimes seen in *P. glandulosa*, particularly in cultivated forms, but in this Bolivian plant *all* the pedicels are recurved, even at anthesis. The calyx is very short and the floral parts are very broad.

Psoralea timorata, sp. nov., erecta et ut videtur fruticosa; ramulis pedunculis petiolisque dense subadpresso strigillosis haud vel vix cum glandulis sessilibus glanduliferis; petiolo communi vulgo 1.5–2.5 cm. longo; foliis ovato-acuminatis plerumque 5–6 cm. longis, 2–3 cm. latis, supra glabratis vel costa venisque parce pilosis subtus pallidioribus parce vel mediocriter pilosis; racemis 8–10 cm. longis plus minusve interruptis folio 2-plo longioribus; pedunculis circa 3 cm. longis; pedicellis 1.5–2.5 mm. longis valde recurvatis; floribus plerumque fasciculatis; bracteis ignotis ut videtur prompte deciduis; pedicellis calycibusque dense cum pilis firmis nigris et albis intermixtis strigosis; calycibus 4.5–5 mm. longis; corolla ut videtur purpurea 6–7 mm. longa; vexillo late obovato circa 4 mm. lato; legumina oblique oblonga acuminata 6 mm. longa exserta, dense pilosa.—Bolivia: Tukumilla bei Tarija, March 31, 1904, *Fiebrig 3430* (Type).

Calliandra tumbeziana, sp. nov., fruticosa, 3 m. alta; ramulis albis glabris ut videtur divaricatis; foliis ad nodos confertis; stipulis ovato-lanceolatis acuminatis striatis ad basin ramulorum et pedunculorum imbricatis; petiolo communi 3–5 mm. longo; pinnis 3–5-jugis plerumque 1.5 cm. longis, rachi dense ciliato-hirsutula;

foliolis multijugis (15–30) glabris vel minute ciliatis, vix nitidulis, oblongo-linearibus acutis, 1.5–2.5 mm. longis; capitulis axillaribus tenuiter pedunculatis; pedunculis glabris vel paulo pilosis, 2.5–4 cm. longis; floribus sessilibus vel exterioribus breviter pedicellatis corolla calycem plus duplo superante; calyce striato 2 mm. longo, dentibus brevibus obtusis ciliatis; corolla breviter 5-fida glabra praeter apicem ciliata; stamina alba circa 2 cm. longa, tubo corollam breviter vel haud superante.—Peru: Shrub in deciduous bushwood, mountains east of Hacienda Chicama, Prov. and Dept. of Tumbes, Feb. 19–24, 1927, *Weberbauer 7677* (Type, Field Museum).

This species has something of the aspect and, apparently, the habit of *C. expansa* Benth., but in character is nearest *C. prostrata* Benth., from which its long slender peduncles readily separate it.

Acacia huarango Ruiz, in herb., *A. tortuosae* peraffinis; fruticosa, diffusa vel prostrata vel suberecta sed semper humilis, ramis pulverulentis, glabris; spinis stipularibus plerumque 2–3 cm. longis; pinnis 5–10-jugis; foliolis multijugis 1–2 mm. longis; legumine brevissime villosulo crasso oblongo-cylindraco 7–10 cm. longo, 10–12 mm. lato.—Peru: Low spreading shrub (1 m. or less), Huánuco, *Macbride & Featherstone 1364, 2034*; Ruiz. Prostrate in mats, Chosica, *Macbride & Featherstone 520*. A spreading shrub seldom over 1 m. high, Pariñas Valley, Piura, *Haught F-78*. Trujillo, *Seler 263* (as *A. macracantha*). San Lorenzo, Lima, *Gaudichaud* (as *A. Farnesiana*), and probably also *Weberbauer 3257* (as *A. tortuosa*, var.) from Huaraz, Ancash, described as 3 m. high with spreading umbrella-like top.

In spite of the great variability of *A. macracantha* and *A. tortuosa*, with which species this spreading shrub has been confused, it seems to me altogether unsatisfactory to regard it as merely a form of one or the other of those species. It has the small leaflets (but fewer pinnae) and the fruit of *A. macracantha*, but under the same conditions and at the same localities it remains a sprawling or even a prostrate shrub. *A. tortuosa* typically has the larger leaflets of *A. Farnesiana*. *A. huarango* is common in central Peru, where it is uniformly well known as “huarango.”

Mimosa dichoneuta, sp. nov., fruticosa, 1–2 m. alta, dense ramosissima; ramulis junioribus gracilibus 2–3 dm. longis, minute strigilloso-puberulis demum glabris; aculeis dissitis plus minusve recurvis mediocriter numerosis; foliis armatis (aculeolis minutis recurvis) parce strigilloso-puberulis vel supra glabris, pinnis 4–6-jugis circa 2 cm. longis, foliolis plerumque 12-jugis, oblongis obliquis obtusis vel aliquid acutiusculis, 4–5 mm. longis, 1–1.5 mm. latis; capitulis subglobosis, circa 12 mm. longis; pedunculis circa 1 cm. longis, puberulis; floribus albis 5-meris, puberulis, circa 2 mm. longis; calycibus minutis, vix denticulatis; leguminibus compressi paulo cur-

vatis molliter puberulis 4–7 cm. longis, 8–10 mm. latis margine dense aculeatis (aculeis recurvis) valvis indivisis vel demum articulatis.—Peru: Gravelly river bluffs, Huaraz, Dept. of Ancash, Oct. 6, 1922, *Macbride & Featherstone 2523* (Type, Field Museum).

Reduce the characters of *M. Weberbaueri* Harms of the section *Acanthocarpae* Benth. and the description of that species would read nearly like that of *M. dichoneuta*! There is, however, one contrapositive character, namely, the pubescent flowers of the latter; and as the differences of foliage and pods are, taken together, well marked, the two plants are probably distinct species. Their pods are strikingly similar to those of *M. hamata* Willd., but that apparently allied Asian species has fewer leaflets and is canescently pubescent.

Mimosa albida H. & B. var. *erratica*, var. nov., subscandens; ramulis ad apicem adpresse strigillosis et parce setosis; foliolis glabris vel subtus paullo setulosis, praeter marginem adpresse setosociliatum; leguminibus faciebus cum pilis cano-strigillosis et setulosis intermixtis.—Peru: On river valley shrubs, Tambo de Pariocota, Dept. of Ancash, Oct. 8, 1922, *Macbride & Featherstone 2552* (Type, Field Museum). Dept. of Lima, *Gaudichaud*.

In foliage this plant resembles surprisingly *M. obtusifolia* Willd. and *M. Velloziana* Mart., Brazilian species with setose pods. As suggested by Bentham, Trans. Linn. Soc. 30: 390. 1875, several of the species allied to *M. sensitiva* L. could be considered as varieties of one entity. However, they seem reasonably distinct on the characters assigned them by Bentham, although considerable herbarium material has been too loosely named. The plant described here may not be constant in character, but it appears to be as distinct from *M. albida* as is *M. floribunda*. The latter typically is a much coarser species, more hairy and more abundantly flowered, but there are perplexing intermediate forms.

Cassia helveola, sp. nov., fruticosa, 1.5–2 m. alta; ramis ramulis petiolis pedunculis pedicellisque inflorescentiarum plus minusve dense, breviter molliterque fulvo-pubescentibus; foliolis plerumque 8–12-jugis, oblongo-ellipticis basi et apice subrotundatis, circa 1.5 cm. longis et 8 mm. latis, glabris vel glabris praeter marginem et costam subtus subadpresse pilosam; petiolo communi 5–10 mm. longo, glandula convexa, inter juga duo inferiora vel saepius nulla; stipulis minutis setaceis; racemis axillaribus suterminalibusque paucifloris; pedunculis 3–6 cm. longis; rachi plerumque circa 2.5 cm. longa; pedicellis gracilibus circa 1.5 cm. longis; bracteolis ovato-lanceolatis, acuminatis; sepalis coloratis, fulvo-pilosis, circa 4 mm. longis; petalis 8–10 mm. longis; legumine compresso breviter (5–8 mm.) stipitato subabrupte cuspidato circa 9 cm. longo, 1 cm. lato, glabrato vel

parce setoso, inter setas minute pubescente.—Peru: Yanahuanca, Dept. of Huánuco, June 16–22, 1922, *Macbride & Featherstone 1183* (Type, Field Museum). Huaraz, Dept. of Ancash, Oct. 6, 1922, *Macbride & Featherstone 2526*. Montaro Valley, near La Mejorada, Dept. of Huancavalica, March 21, 1926, *Weberbauer 7608*.

This *Cassia* undoubtedly is a member of the Section *Chamaesenna* Benth., Trans. Linn. Soc. 27: 538. 1869, and apparently is related to the species comprising Series *Pachycarpae* Benth., from all of which it differs notably in its soft fulvous pubescence. It may prove to be only a very pubescent variety of one of the too closely allied species of the group.

Dr. Rose undertook the determination of my Peruvian collections in this genus and wrote two unpublished names on the herbarium sheets of the material cited above. However, he subsequently crossed out both names, and I have therefore hesitated to make him responsible for the species, especially since it is in this genus where the interpretation of characters is so difficult, though the plant appears, in fact, to be undescribed.

Cassia Weberbaueri, sp. nov., fruticosa, 10 m. alta; ramulis angulato-teretiusculis minute parceque strigillosis; stipulis linearisetaceis; foliis eglandulosis; foliolis 3–5-jugis, petiolatis, membranaceis, subconcoloribus, demum supra plus minusve nitidulis imprimis subtus minute cum pilis crispis strigilloso-pubescentibus, ovato-lanceolatis, acutis vel subacuminatis, 7–10 cm. longis, 3–5 cm. latis (paris inferioris saepius minora); petiolo communi 5–7 cm. longo; racemis axillaribus fere 1.5 dm. longis foliis brevioribus laxifloris; pedicellis gracilibus minute pilosis circa 2.5 cm. longis; sepalis aliquid pubescentibus ovalibus circa 5 mm. longis; petalis 1–1.5 cm. longis; staminibus 5 vel 7, saepius etiam 2 vel 3 reductis, glabris, poris apicalibus dehiscentibus; filamentis aequalibus brevibus; legumine compresso ut videtur stipitato 4.5 dm. longo.—Peru: Plain southeast of Hacienda La Chozza, Dept. of Tumbes, Feb. 28–March 3, 1927, *Weberbauer 7709* (Type, Field Museum).

According to Bentham's *Revision of the genus Cassia*, Trans. Linn. Soc. 27: 538. 1869, this species appears to be referable to the Subgenus *Senna* Benth., Section *Chamaesenna* Benth. because of the stamen character—"perfect anthers 7." It has, however, in other respects, more the characters of the Section *Apocuitia* Benth., but its fewer perfect anthers are glabrous. Other sections of the genus to which it might be keyed have glandular leaves or at least subterete pods. The species, therefore, seems to be undescribed, in spite of the fact that it is almost astonishing if a plant with such striking fruits, especially from northern Peru, is yet unnamed.

Cassia andina Rose, sp. nov., ad *C. racemosam* vergens, sed sepalis 10–12 mm. longis et antheris ab apice demum longitudinaliter dehiscentibus; filamentis subaequalibus; antheris majoribus arcuatis 10–12 mm. longis, minoribus 5 mm. longis; caetera *C. racemosa*.—Peru: Small forest tree with open crown, about 6 m. high, Cushi, Dept. of Huánuco, June 19–23, 1923, *Macbride 4825* (Type, Field Museum).

Dr. Rose at first referred this plant to *C. racemosa* Mill., which is not uncommon in eastern Peru and which it exactly simulates except for the much longer and finally longitudinally dehiscent anthers. Perhaps the character is not important, but at present there seems to be no alternative but to regard it as significant.

Cassia latipetiolata Dombey ex Vog. Syn. Cass. 29. 1837. *C. versicolor* Meyen ex Vog., l. c.

This species varies considerably, but it is not apparent to me that there are specific or even varietal differences in the many collections which have now accumulated. Dr. Rose, however, has assigned new names to several of my specimens from central Peru. The most striking variation is in the pods. These are sometimes acuminate, sometimes rounded at apex and merely apiculate, with many intermediate developments in form and size in a series of specimens. If several species are really represented, as Dr. Rose thought, it seems strange that there are no correlative characters of flowers or foliage—or, at least, I see none.

Hoffmannseggia viscosa H. & A. var. *egena*, var. nov., fruticosa, adscendens vel erecta, glabrata sed parce stipitato-glandulosa; floribus 1 cm. longis; filamentis superne valde glanduliferis, inferne cum pilis vix glandulosis hispidulis.—Peru: Rainy-green formation, mostly annuals, Mt. Estuquina, N. W. of Moquegua, Prov. of Moquegua, March 22, 1925, *Weberbauer 7419a* (Type, Field Museum). Open rocky cliff along river, April 8, 1925, Tiabaya, Arequipa, *Pennell 13073*.

In appearance this plant resembles very greatly *Caesalpinia mimosifolia* Griseb., of Argentina (which is certainly a species of *Hoffmannseggia*), and it is only because the members of the latter group are seemingly so poorly defined that I treat it as merely a variety of *H. viscosa* H. & A. The Hooker and Arnott plant is not uncommon from central to northern Peru in the dryer western foothills of the Andes, where it is uniformly a much more densely stipitate-glandular shrub with definitely smaller flowers. There are, however, two other species which are comparable, in some respects, to our plant, namely, *H. falcaria* Lag.—which probably is unknown

from Peru regardless of the existence of several collections purporting to come from there—and *H. prostrata* Lag. Both of these are typically perennial herbs, the latter flowering as an annual and eventually becoming suffrutescent at base but never shrubby as *H. viscosa* and its variety. Moreover, it appears from herbarium material that the filaments of these species are more glandular to the base, while those of *H. viscosa* and its variety *egena* are mostly glandular only above. *H. prostrata* is a canescent-strigillose plant with no foliage glands.

Diplotropis ferruginea Benth. in Mart. Fl. Bras. 15¹: 321. 1862.

Apparently the first record of this tree for Peru is a collection by Carlos Schunke (325) from the Chanchamayo Valley, Department of Junín. Another species of the genus, however, in the sense of Benthams, l. c., has been collected at Soledad, Department of Loreto by Dr. Tessmann (5209) and referred by Professor Harms (doubtfully) to *D. Martiusii* Benth. But, according to Ducke, Archiv. Rio Janeiro 31–33. 1915, these trees, so similar in flowers and foliage, and apparently also in aspect, must be regarded as belonging to different genera because of fundamental fruit differences.

Unfortunately his observation is well grounded, considered from a purely logical standpoint, since similar fruit characters are elsewhere in the family a convenient and sometimes a natural basis for generic definition. If one must always be logical, though, in plant nomenclature, one will often find oneself being absurd. When even the generic name can not be told until mature fruit is available, our classification can not be said to be useful. Others than professional taxonomists, perhaps rightly, expect it to be reasonably so, at least in the case of plants with economic or esthetic interest.

Crotalaria nitens HBK. var. *trichina*, var. nov., ut videtur annua; foliis supra primo leviter adpresse villosis imprimis ad nervos demum glabratis vel glaberrimis.—Peru: Cerro de Cusilluyoc, Dept. of Cuzco, May 3–6, 1925, Pennell 14000 (Type, Field Museum).

In its partly glabrous leaves this plant resembles certain Brazilian species, but it seems to me, from the material at hand, to be exactly *C. nitens* in every other respect.

Lupinus Fieldii Rose, sp. nov., in herb. Habitu et indumento *L. multifloro* Desr. approximatur; stipulis lineari-setaceis vix 1 cm. longis; foliolis plerumque 9–11, demum 3–3.5 cm. longis et circa 6 mm. latis, subabrupte acutis; racemis anguste cylindraceis, breviter pedunculatis, multi- sed vix densifloris, 1.5–2 dm. longis; bracteis ovato-lanceolato-acuminatis 6–8 mm. longis; pedicellis 1.5–2 mm.

longis; calyce bracteolato, labio superiore bifido (laciniis circa 4 mm. longis) inferiore integro vel ut videtur interdum minute tridentato; floribus lilacinis; vexillum fere 12 mm. longum in parte mediana lutea longitudinaliter plicata extus superne pubescens; alae obovatae circa 14 mm. longae, carina aequilonga; legumine (fere 2 cm. longo) dense rufo-villoso, ut videtur 3-4-spermo.—Peru: Steep short-grass slopes, Morococha, Dept. of Junín, May 23, 1922, *Macbride & Featherstone 876* (Type, Field Museum). Near Yauli, Dept. of Junín, *Weberbauer 351*. La Oroya, Dept. of Junín, *Weberbauer 2576*.

It gives me pleasure to publish for the late Dr. Rose (under his choice of name) this beautiful species of lupine. Its apparent relationship is with *L. multiflorus* Desr., to which species the Weberbauer collections were referred doubtfully by Professor Ulbrich. The species differs, however, in its entire lower calyx tooth and in its pubescent banner. *Weberbauer 2576* has the lower calyx tooth tridentate but only very minutely so. There is a resemblance to *L. pinguis* Ulbr., but the dense inflorescence of that species is shorter than the leaves and the flowers are glabrous. *L. Fieldii* seems to differ even more fundamentally from all other silvery-pubescent Andean lupines so far described. I found the foliage somewhat ill-scented but the flowers pleasantly fragrant. From a partly contrary observation by Dr. Weberbauer, it seems probable that he confused or rather merged the odor of the foliage with that of the flowers.

Lupinus andinus Rose, sp. nov., in herb. Habitu et folio *L. pulvinari* Ulbr. approximatur, sed indumento undique subsericeo; foliolis plerumque 5-7 mm. longis; petiolis ad 2.5 cm. longis; calyce fere 1 cm. longo, ebracteolato, labio superiore bipartito (laciniis anguste ovato-acuminatis circa 4 mm. longis), inferiore valde bidentato; vexillum anguste obovatum circa 12 mm. longum, alae oblongae fere 11 mm. longae, carina aequilonga; legumen ignotum.—Peru: Steep short-grass slope, Morococha, Dept. of Junín, May 23, 1922, *Macbride & Featherstone 884* (Type, Field Museum). Upland slope, Río Blanco, Dept. of Lima, *Macbride & Featherstone 810* (?).

Among the several collections of *Lupinus* made by me in Peru which Dr. Rose indicated (in the herbarium) as new is this one which seems to represent an undescribed species. I have, therefore, indicated the apparent relationship and chosen a name, since the one scribbled on the sheet by the author is untenable. Except for the vastly different calyx and more appressed pubescence, the species is similar to *L. pulvinaris* Ulbr. Bot. Jahrb. 39: 541. 1906.

Lupinus huaronensis, sp. nov., perennis herbaceus, fere undique (praeter bracteas) breviter vel subadpresse pilosus sed haud lanuginoso-villosus; caulibus robustis erectis adscendentibusve

saepius numerosis, dense et molliter pubescentibus; foliolis 8-13, oblongo-lanceolatis, acutis (ad basin angustatis) majoribus circa 5 cm. longis et fere 1 cm. latis, junioribus densissime pilosis; petiolis gracilibus vel mediocriter robustis, 1-1.5 dm. longis parce cum pilis subpatulis brevibusque pubescentibus, ad basin paullo dilatatis; stipulis circa 1.5 cm. longis, lineari-subulatis; racemis robustis breviter pedunculatis densifloris fere cylindraceis, 2-2.5 dm. longis; bracteis lineari-subulatis 12-13 mm. longis villosa-pilosis; pedicellis 2-3 mm. longis; calycis (bracteolati) labio superiore profunde bifido, inferiore integro vel minute et obscure emarginato fere 8 mm. longo; floribus ad fere 1.5 cm. longis, glabris; vexillum album, subobovatum apice vix emarginatum longitudinaliter plicatum, 13 mm. longum et 9 mm. latum; carina et petala intense lilacina circa 14 mm. longa; legumine molliter piloso, 3 (-4?)-spermo, 12 mm. longo.—Peru: Rocky slope, Huaron, Dept. of Junín, June 12, 1922, *Macbride & Featherstone 1141* (Type, Field Museum).

Old plants were much branched circularly from the base, forming large subcespitose clumps. The species is apparently comparable to *L. alopecuroides* Desr. and to *L. nubigenus* HBK., but it has the entire or subentire lower calyx lip of *L. Weberbaueri* Ulbr. The latter, however, is an inordinately villous plant, and the former two are extraordinarily lanuginose. In pubescence *L. huaronensis* reminds one of *L. pinguis* Ulbr., which has entirely different bracts and an inflorescence shorter than the leaves. Of course this and other apparent segregates of the earlier described species may prove to be merely variants, a fact suggested by the existence of a lupine similar to *L. huaronensis* in pubescence but with the elongate bracts and 3-toothed lower calyx tooth of *L. alopecuroides*. Perhaps it should be treated as yet another species, but it seems more practical to regard it as a variation of the plant just described, so it may be called:

***Lupinus huaronensis* Macbr. var. *pascoensis*, var. nov.**, ut *L. huaronensis*; foliolis plerumque 12, demum supra glabratiss; stipulis lanceolato-linearibus ad 3.5 cm. longis; bracteis 15-17 mm. longis; calycis labio inferiore tridentato; floribus vix 1.5 cm. longis; vexillum album acutiusculum, circa 12 mm. longum; carina et petala pallide caerulea.—Peru: Cerro de Pasco, Dept. of Junín, March 28, 1923, *Macbride 3056* (Type, Field Museum).

To continue the argument above regarding this plant, I think, at any rate, that the denticulation of a calyx tooth—a character upon which so much importance has been placed in *Lupinus*—is a trivial difference upon which to base or maintain a "species" unless it is accompanied by other distinctive features.

Lupinus visoensis, sp. nov., fruticosus erectus ramosissimus foliosus 1 m. altus; ramis ramulisque aliquid tortuosis, glabris vel junioribus adpresse strigosis; petiolis (circa 5 mm. longis) foliolisque subtus leviter sericeo-pubescentibus; foliolis 5-8, oblongo-obovatis vel spathulatis abrupte apiculatis, circa 1 cm. longis, 4 mm. latis, supra glabris; racemis brevibus ad apices ramulorum breviter pedunculatis; floribus subverticillatis; pedicellis (6 mm. longis) bracteis calycibusque pilis patulis firmissculis fulvescentibus dense obtectis; bracteis ovato-acutis circa 2.5 mm. longis; calycis labio superiore late emarginato, inferiore integro; corolla caerulea; vexillum fere orbiculare 14 mm. longum medium longitudinaliter plicatum luteum, extus superne valde sericeo-pubescentibus; alae fere 13 mm. longae, 7 mm. latae, late obliquae ovatae acutiusculae; carina aequilonga; legumen ignotum.—Peru: Rocky grassy knolls, Tambo de Viso, Dept. of Lima, May 5-14, 1922, *Macbride & Featherstone* 596 (Type, Field Museum).

This segregate of *L. Smithianus* HBK. and *L. Taurus* Benth. differs especially in its elongate pedicels, dense inflorescence pubescence, and merely deeply emarginate upper calyx tooth. The plants seen were round bushes with fragrant, light, but bright blue flowers.

Lupinus microphyllus Desr. var. **chavanillensis**, var. nov., fere undique dense hirsuto-villosus; foliolis cuneato-obovatis circa 3 vel rare 5 mm. longis; floribus glabris, 1 cm. longis; calycis breviter bracteolati labio superiore profunde bifido, inferiore integro; legumine (vix 1.5 cm. longo) dense villosus, ut videtur 3-spermo.—Peru: Dry grassy slopes, Chavanillo, Dept. of Huánuco, August 17-26, 1922, *Macbride & Featherstone* 1963 (Type, Field Museum).

The range of variation of the plant commonly determined as *L. microphyllus* is so little understood that this much more pubescent and larger-flowered form is perhaps at present best treated as only a variety.

Medicago sativa L. forma **salaverryensis**, f. nov., undique dense cum pilis mollibus albis subadpressis pubescens.—Peru: Cultivated near Salaverry, April 3, 1922, *Macbride & Featherstone* 48 (Type, Field Museum).

Noticing that alfalfa carried in Salaverry was of a strange hue, I asked for a bit, which is this specimen. The entire lot was, in the same way, amazingly gray-hairy, to an extent not approached in any specimen in the immense collection of *Medicago sativa* in the Berlin-Dahlem herbarium. Nor later did we find the alfalfa grown in central Peru different from the usual green and glabrate form.

Coursetia tumbezensis, sp. nov., fruticosa, circa 4 m. alta, ut videtur paullo ramosa, fere glabra; ramis superioribus gracilibus striatis subherbaceis; stipulis setaceis, circa 5 mm. longis; foliis

breviter petiolatis, circa 1.5 dm. longis; foliolis 15–18-jugis, oblongo-ellipticis abrupte apiculatis, fere 2.5 cm. longis et circa 8 mm. latis, membranaceis, junioribus sericeo-pubescentibus, demum supra glabris, subtus leviter pilosis vel glabris; racemis axillaribus, longe pedunculatis laxifloris, 2–2.5 dm. longis, minute adpresseque strigillosis; pedicellis gracilibus ad 1 cm. longis; calycis dentibus late ovato-acuminatis, fere 2 mm. longis, tubo brevioribus; floribus glabris purpureis; vexillum late orbiculatum, lateribus reflexis, circa 13 mm. longum; alae obliquae oblongo-obovatae fere 15 mm. longae; carina arcuato-acutiuscula; stylo 8 mm. longo ad apicem longitudinaliter barbato; legumine ut videtur longo haud tortuoso glabro.—Peru: Deciduous bushwood, mountains east of Hacienda Chicama, Dept. of Tumbes, February 19–24, 1927, *Weberbauer 7647* (Type, Field Museum).

The pod is so undeveloped that the generic identity of this bush is uncertain. However, it has the stamens, style, and calyx of *Coursetia*, and I have not been able to match it in the herbarium at Berlin-Dahlem in any of the several closely related genera. Vegetatively it resembles *C. grandiflora* Benth., a species with (comparatively) very pubescent and firm foliage.

Astragalus Dillinghami, sp. nov., subpulvinaris aut suffruticosus humillimus et brevirameus; ramis 1.5–3 cm. longis confertissime foliatis; stipulis dense imbricatis ovatis acutis membranaceis villosis basibus persistentibus ramos bene vestientibus; foliis 1.5–2 cm. longis, 4–6-jugis, cum pilis 1.5–2.5 mm. longis dense sericeo-villosissimis; foliolis ovato-lanceolatis acutis, plerumque circa 4 mm. longis et 2 mm. latis; floribus solitariis vel paucis in axillis dense congestis ut videtur sessilibus; bracteis lineari-lanceolatis, circa 5 mm. longis, adpresse villosis; calycis dense subadpresseque sericeo-villosissimi 7 mm. longi, dentibus lineari-setaceis tubo paullo brevioribus; floribus 1 cm. longis; vexillum obovato-ellipticum; alae vexillo fere aequilongae, carina illis parum brevior.—Peru: Stony short-grass slopes on the mountains between Tarma and Morococha, June 1–6, 1922, *Macbride & Featherstone 1052* (Type, Field Museum).

At least twenty species of *Astragalus* are known to grow in Peru, and several others described from adjacent countries, notably from Bolivia, may, of course, be expected. About half of the species possess in common the character of sessile flowers, although sometimes the inflorescence may be so shortly peduncled that this is scarcely discernible. However this may be, no Andean species seen by me (and I have studied a majority of the species) is so strongly shaggy-villous as the plant described here. In some respects it is similar to both *A. Pickeringii* Gray and *A. Urbanianus* Ulbrich, from which it is readily separated by characters of leaves and pubescence.

Accordingly, difficult as it is to understand the species of *Astragalus*, it seems evident that the plant is undescribed. It is appropriate to name this lilac-colored pea-flower for Mr. Dillingham of Morococha, an official of the Cerro de Pasco Copper Corporation, and thereby commemorate not only the hospitality which he so kindly extended to me but also his own love of flowers, particularly sweet-peas, which he successfully grows in his greenhouse nearly on top of the Andes. Except for the courteous interest of Mr. and Mrs. Dillingham, I should not have obtained this and many other specimens from the vicinity of Morococha.

Astragalus Richii Gray, Bot. Wilkes Exped. 414. 1854. *A. macrorrhynchus* Ulbr. Bot. Jahrb. 37: 420. 1905.

Professor Ulbrich of the Botanical Museum, Berlin-Dahlem, through the courtesy of the director, Professor Diels, very kindly sent me recently, among other type fragments, a portion of the original specimen of *A. macrorrhynchus*. I have been sorry to discover that it matches exactly the type of *A. Richii*, which Dr. Robinson lent me from the Gray Herbarium. The several other Peruvian species in this genus described by Ulbrich appear to be valid.

Astragalus garbancillo Cav. var. **varus**, var. nov., subacaulis (caulibus circa 5 cm. altis) vel procumbens; stipulis vaginantibus ramorum novellorum subimbricatis; ramis glabratiss, basi denudatis; foliolis 21–35 oblongo-obovatis obtusis vel rotundatis minute apiculatis supra glabris subtus parce pilosis circa 5 mm. longis et 2 mm. latis; spica circa 5-flora breviter pedunculata petiolum adaequante; pedunculis fructiferis valde recurvatis plerumque solum 1 cm. longis; calycibus nigro-pubescentibus dentibus subulatis tubo cylindraceo (4 mm. longo) dimidio brevioribus; floribus albidis circa 12 mm. longis; legumine oblongo abrupte apiculato, 7 mm. longo, vix 4 mm. lato, adpresse pubescente, 6–8-spermo.—Peru: Dry stony slopes, 3,500 m., Pomopampa, east of Huaraz, Dept. of Ancash, October 4, 1922, Macbride & Featherstone 2499 (Type, Field Museum).

This plant evidently is not merely an alpine form of the widely distributed and somewhat variable *A. garbancillo* because in addition to its small size and depressed habit, its very short peduncles are bent down and curved in, a striking character displayed rarely and then only in a small degree in the large series of specimens of *A. garbancillo* which I have seen. The short calyx teeth and small many-seeded pods also are noteworthy characters. Accordingly I have described the plant at some length, as further collections may very probably show it to be a distinct species.

Another variant of *A. garbancillo* is not nearly so well marked as the foregoing, but since it already has a name it may be convenient to accord it status. The typical form of the species, well represented, I think, by *Macbride & Featherstone 945* from La Oroya, Peru, the type locality, has white-pubescent stems. Specimens from elsewhere in Peru, and from Bolivia, are mostly green-stemmed, the pubescence, if present, being so fine that it is not obvious. But, as might be expected of a plant which grows like a weed along trails and near habitations, it is variable in size and in degree of pubescence. Accordingly, the less pubescent form may best be given only varietal recognition as indicated below. *A. unifolius* L'Hér. Stirp. Nov. 168. 1791 (Dec.) is the typical form, at least as regards pubescence, and I think, indeed, is altogether the same. Apparently it was published several months later than *A. garbancillo* Cav.

***Astragalus garbancillo* Cav. var. *Mandoni* (Rusby), comb. nov. *A. Mandoni* Rusby, Mem. Torr. Club 3: 19. 1893.**

***Adesmia Augusti*, sp. nov.,** fruticulosa decumbens ramosissima mediocriter spinosa, haud glandulosa; ramulis novellis adpresse cinereo-pubescentibus, spinis ramosis mox glabratissimis sed haud nitidis; petiolis (5–10 mm. longis) foliis (laxe 3–4-jugis) pedicellis (4–7 mm. longis) calycibusque dense cum pilis firmiusculis vix patulis sericeo-pubescentibus; foliolis late obovatis acutiusculis, fere 4 mm. longis et 3 mm. latis; calycis 4 mm. longi campanulati laciniis anguste ovato-lanceolatis, circa 1.5 mm. longis, subaequalibus; corolla lutea 8 mm. longa; vexillum extus leviter sericeo-pubescentibus; alae anguste ovatae vel suboblongae, parce pilosae, longe et tenuiter stipitatae; legumine (immature) plumoso-piloso.—Peru: Candarave, Dept. of Tacna, *Weberbauer 7389* (Type, Field Museum).

Although this decumbent shrubby *Adesmia* might be expected to be a Chilean species, I have not been able to refer it to any of the numerous forms recorded there. In fact, it seems to resemble most another Peruvian species, *A. spinosissima* Meyen, from which it differs in its petioled leaves, nearly twice as large leaflets, narrower calyx teeth, and fewer and dull spines. These occur at intervals of 1–1.5 cm., at least twice as remotely as in Meyen's plant. Among Chilean species perhaps related may be mentioned *A. arborea* Bert. with glabrous flowers, *A. leucopogon* Phil. with larger leaflets and a membranous calyx with sublinear teeth, *A. Godoyae* Phil. with subsessile leaves of many leaflets, and *A. erinacea* Phil. and *A. senticola* Phil., both with larger leaflets and, in part, glandular pubescence.

Adesmia Augusti was found in a society composed of scattering shrubs, *Cereus*, and herbs. The banner of the yellow flowers was veined with brown. The choice of name is with my friend's permission.

Aeschynomene tumbezensis, sp. nov., fruticosa, 3 m. alta, ramosissima; ramulis gracilibus novellis minute strigillosis vel glabris demum glabris; stipulis anguste ovato-lanceolatis acuminatis 4-5 mm. longis; foliis 4-5 cm. longis, vix confertis; foliolis 6-10-jugis, suboblique oblongis vel oblongo-ellipticis, abrupte mucronulatis, 12-18 mm. longis, 4-5 mm. latis, membranaceis, supra fere glabris, subtus pallidioribus et parce vel vix subadpresso pilosis; racemis brevibus, paucifloris; pedunculis pedicellisque (5 mm. longis) gracilibus, sparse cum pilis strigillosis et hispidulis intermixtis pubescentibus; bracteis bracteolisque parvis, ovatis; calycis vix 4 mm. longi dentibus superioribus tubo dimidio brevioribus; floribus luteis, vix 1 cm. longis; vexillo subrotundato leviter villosa; leguminibus longe stipitatis (circa 8 mm.), articulis firmiusculis glabris circa 1 cm. longis et 8 mm. latis.---Peru: Deciduous bushwood, mountains east of Hacienda Chicama, Dept. of Tumbes, February 19-24, 1927, *Weberbauer 7669* (Type, Field Museum). Between Zorritos and Tumbes, March 8, 1927, *Weberbauer 7746*.

Very similar, if one may judge from description, to *A. Martii* Benth. of eastern Brazil, from which it seems to be distinct by virtue of its fewer, larger and soft and membranous leaflets, elongate stipules, shorter calyx and, probably, broader fruit. From the closely related *A. interrupta* Benth. and *A. platycarpa* Benth. it differs especially in its short calyx teeth as well as in other respects.

Desmodium distortum (Aubl.), comb. nov. *Hedysarum distortum* Aubl. Hist. Pl. Guiane 2: 774. 1775. *Meibomia distorta* Schindl. Rep. Spec. Nov. 22: 281. 1926, not 20: 148. 1924.

This is *D. asperum* (Poir.) Desv. according to Schindler, and is represented by my numbers 3988 and 3972 from Muña and Yanano, Huánuco, Peru. Floristically, at least, there is nothing gained by Schindler's segregation of the genus *Desmodium*, op. cit. 20: 136 et seq., and I doubt if the action is justified even from a purely taxonomic standpoint.

Desmodium micranthum (Schindl.), comb. nov. *Meibomia micrantha* Schindl. Rep. Spec. Nov. 22: 283. 1926.

This is an exceptionally rank-growing, minutely flowered species, but with the basic characteristics of *D. tenellum* HBK.

Desmodium Poeppigianum (Schindl.), comb. nov. *Nephro-meria Poeppigiana* Schindl. Rep. Spec. Nov. 20: 283. 1924.

Like the foregoing species, this is known as yet only from Peru, and, to the author, only from a Poeppig specimen obtained in the upper Amazonian region. It is represented also by my collection from Pozuzo (4649). It is a close but apparently valid relative of *D. Barclayi* Hook.

Desmodium Weberbaueri (Schindl.), comb. nov. *Meibomia Weberbaueri* Schindl. Rep. Spec. Nov. 22: 275. 1926.

This southern Peruvian species is a quite different plant from *D. strobilaceum* Schlecht. of Mexico, with which it has been confused. Especially distinctive are the elongate pedicels. Besides the type from Sandía, it is now known from Cuzco: *Pennell 13954, 14020*. Professor Herrera has collected a similar plant (his 1984) in Cuzco, but it has smaller leaves and less pubescence. Whether these differences indicate more than an ecological state is open to question, since the known collections of *D. Weberbaueri* are so uniform in character.

Desmodium delotum, sp. nov., reptans vel adscendens, plus minusve pubescens, subsuffruticosum; stipulis basi dilatatis striatis ut videtur liberis; petiolis ad 3 cm. longis; foliolis oblongo-ovatis vel ovatis acutis, demum 3.5–5 cm. longis, 1.5–3.5 cm. latis, chartaceo-coriaceis, supra nitidulis glabris, subtus adpresse pilosis praecipue ad nervos; racemis demum elongatis, laxifloris strictis breviter cum pilis fulvis uncinatis pubescentibus; bracteis ovato-acuminatis, saepius paullo conspicuis; pedicellis fructiferis 8 mm. longis; calycibus fere glabris; laciniis lateralibus ovato-acutis, infimo paullo longiore, acuminato; floribus albis, circa 5 mm. longis; leguminis subsessilis, ad 2 cm. longi, sutura superior rectiuscula, inferior leviter sinuata, articulis plerumque 4, interdum obscure sinuato-tortuosis, fere glabris tumidiusculis, 5 mm. longis, 2 ad vix 2.5 mm. latis.—Peru: Trailing-ascending on gravelly banks, La Merced, Dept. of Junín, August 10–24, 1923, *Macbride 5279* (Type, Field Museum).

The narrow pods seem to separate this plant very definitely from all other *Desmodiums*, even from the variable *D. uncinatum* (Jacq.) DC., and from all of its numerous relatives, although in other respects it does not appear to be especially distinctive. At any rate, it is not duplicated in the large collection of *Desmodiums* at Berlin-Dahlem.

Geoffroya striata (Willd.), comb. nov. *Robinia striata* Willd. Sp. Pl. 3: 1132. 1800. *Geoffroya superba* H. & B. Pl. Aequin. 2: 69. 1808. *G. Bredemeyeri* HBK. Nov. Gen. & Sp. 6: 379. 1823.

Dr. Weberbauer has recently collected this shrub or small tree in the coastal plain region of Tumbes, Peru. His excellent specimens (7622 and 7719) match well the type of *Robinia striata* Willd. by Bredemeyer from Caracas.

Vicia lomensis, sp. nov., annua, diffusa vel prostrata, glabra vel superne minute parceque pubescens; caulibus gracilibus 2–3 dm. longis; stipulis 2–4 mm. longis, aliquid hastatis plus minusve

angulato-denticulatis; foliolis saepius alternis 5(3)–7-jugis oblongo-obovatis apice truncatis retusis vel irregulariter denticulatis 5–6 mm. longis et 2.5 mm. latis; cirrho simplicibus; floribus solitariis, circa 3.5 mm. longis, subsessilibus vel breviter pedicellatis; pedicellis fructiferis vix 2 mm. longis, glabris; calyce glabrato vel paullo pilosulo circa 2 mm. longo, dentibus subulato-acutissimis subaequalibus; legumine demum glabro, 2–2.5 cm. longo, circa 6 mm. lato.—Peru: Trailing in rocky places on lomas by the sea, Lurín, Lima, September 23, 1923, *Macbride 5943* (Type, Field Museum). Barranco, Lima, October 23, 1902, *Weberbauer 1656*. San Agustín, Lima, September 26, 1909, *Weberbauer 5236*.

The collections of Dr. Weberbauer were referred doubtfully to *V. humilis* HBK. Nov. Gen. & Sp. 6: 498. 1823. That Mexican plant has only two or three pairs of oblong-linear leaflets and twice as long flowers borne on elongate pilose pedicels. There is a very similar plant in Chile (collected by Poeppig and distributed under an unpublished name), and it is apparently matched by a collection from Bolivia (*Buchtien 632*). However this may be, *V. lomensis* seems constant in its distinctive characters of more numerous leaflets and tiny subsessile flowers. It is probably an endemic of the lomas of Peru.

Vicia Matthewsii Gray, var. *Lessoni* (Alef.), var. nov., fere glabra; stipulis minutis; foliolis plerumque 4-jugis, anguste oblongis vel interdum subelliptico-oblongis, (1.5)2.5–3.5(4) cm. longis, 3–4(6) mm. latis, obtusis retusisve, aliquid trimucronulatis; racemis paucifloris; floribus 6–vix 8 mm. longis.—Peru: Lurín, Dept. of Lima, *Pennell 12211*. Lima, *Lesson*. Without locality, *Haynie*.

The last two collections are in the Berlin-Dahlem Herbarium under an unpublished generic and specific name. I have not published the name for the author as a species under *Vicia* because my number 3282 from Mito, Peru, is apparently an intermediate form, although the variety typically is well distinguished by its minute stipules, mostly strictly oblong leaflets, and few and small flowers. Occasionally a collection of *V. Matthewsii* approaches the coarser and much hairier *V. andicola* HBK., which seems to be a comparatively rare species, but in general the former is uniform in character and distinct enough.

Clitoria pozuzoensis, sp. nov., fruticosa, ut videtur erecta; ramulis foliisque glabris; petiolis 4 cm. longis; foliolis ovatis basi rotundatis apice gradatim attenuato-acuminatis, 7–8 cm. longis, circa 3.5 cm. latis, pallide viridibus chartaceo-membranaceis praecipue subtus prominenter reticulato-venosis, supra vix nitidulis; racemis 3–4 cm. longis plus minusve confertis breviter pedunculatis undique cum pilis fulvis firmissculis adpressis dense pubescentibus;

bracteis late ovatis, 3-4 mm. longis, pedicello saepius longioribus; bracteolis ovalibus tenuiter striatis subcoriaceis, vix 1 cm. longis; calycis laciniis fere aequalibus late ovatis subobtusis, tubo (18 mm. longo) multo brevioribus; vexillo dense fulvo-sericeo-pubescente, 6 cm. longo; legumine ignoto.—Peru: Pozuzo, Dept. of Huánuco, June 20-22, 1923, *Macbride 4652* (Type, Field Museum).

Notwithstanding the fact that some of the characters relied upon by Benth. Fl. Bras. 15¹: 118, to distinguish the species of the section *Clitorianthes* Benth. now, with more material, seem to be of questionable significance, I am unable to include this plant in any of the members of that group, since its proportionate development of bracteoles, calyx, and corolla is so completely at variance. Nevertheless it "keys" to *C. javiensis* Benth., a member of this particular group, but a species totally different from *C. pozuzoensis*.

Erythrina Lorenoi, sp. nov., arborea, 7-8 m. alta, praeter inflorescentiam glaberrima; petiolis circa 2 dm. longis; foliolis rotundo-ovatis basi subtruncatis apice acuminatis, 1.5-fere 2.5 dm. longis, 11-16 cm. latis, chartaceis ubique viridibus nervis (saepius 8) nervisque praecipue subtus prominulis; racemis 2.5-4 dm. longis, glabris vel superne minutissime puberulis; pedicellis fasciculatis, 3-4 mm. longis; calycis lobis irregulariter et late ovatis, 3-5; tubo subcampanulato, circa 7 mm. longo; floribus 2.5 cm. longis; vexillo elliptico-rotundato, 15-18 mm. lato plus minusve (ad 5 mm.) emarginato vel ut videtur interdum integro; alis oblongis, vix 7 mm. longis; petalis valde oblique obovatis, circa 6 mm. latis et vix 12 mm. longis, leviter plus minusve connatis; legumine breviter stipitato, ut videtur carnosio glabro plus minusve inter semina constricto, circa 2 dm. longo (immaturo).—Peru: Cedrobamba, Valle de San Miguel, Cuzco, July 20, 1928, *Herrera 2021* (Type, Field Museum).

Because of the very large, subrotund, nearly square-based leaflets, it does not seem probable that this *Erythrina* of southern Peru is referable to *E. edulis* Triana or to *E. esculenta* Sprague of Colombia, Ecuador, and north-central Peru (the last mentioned has been found at Muña, my 3956), species apparently uniformly characterized by relatively narrow, ovate leaves, oblique and narrowed at base. Also the flower parts and the pedicels of the species proposed here are shorter.

E. Lorenoi is named, with pleasure, at the request of Professor F. L. Herrera, for Dr. Antonio Loreno, associate botanist at the University of Cuzco.

Cratylia dichrona, sp. nov., fruticoso-liana; ramulis junioribus dense puberulis demum glabris; petiolis 5-7 cm. longis, molliter pubescentibus; foliolis adultis late ovatis vel subrotundatis, ut videtur obtuse acuminatis, majoribus 8-10 cm. longis, 6-8 cm.

latis, chartaceo-coriaceis supra opacis et cum pilis crispis paullo pubescentibus, subtus dense et molliter villosis; racemis axillaribus elongatis dissitifloris; fasciculis circa 10-floris; floribus purpureis, 2 cm. longis; vexillo glabro praeter apicem leviter sericeo; pedicellis 3-5 mm. longis; bracteolis late ovatis, obtusis, vix 2 mm. longis; calycibus cano-sericeis, 8-10 mm. longis, laciniis latissimis, tubo triplo brevioribus; legumine vix stipitato, circa 1 dm. longo et 12 mm. lato, molliter et dense rufo-velutino.—Peru: La Merced, August 10-24, 1923, *Macbride 5270* (Type, Field Museum).

The foliage of this plant is softly pubescent in the manner of that of *C. mollis* Mart., but it has the silky short-lobed calyx and glabrate flowers of *C. parviflora* (Rusby) Harms. The status of these two closely related species is open to question, but any more satisfactory disposition must await more collections.

Rhynchosia mantaroensis, sp. nov., suffruticosa, superne herbacea volubilis; ramis petiolis pedunculisque molliter et breviter rufo-pubescentibus, demum glabratissimis tenuiter striatis; stipulis ovato-lanceolatis acuminatis, fere 5 mm. longis; petiolo communi circa 2 cm. longo; foliolis rhombeo-deltoides, subaequalibus, plerumque 3 cm. longis, 2 cm. latis, basi late rotundatis vel subtruncatis apice acutiusculis membranaceo-chartaceis, supra subreticulatis minute et molliter pilosis, subtus cum nervis nervulisque prominentibus glanduloso-punctatis et praecipue ad venas rufo-pilosis; racemis viscido-hispidulo-pilosis, pedunculatis, laxiusculis, circa 10-floris, 6-8 cm. longis; pedicellis 2-3 mm. longis; bracteis caducissimis circa 4 mm. longis; calycis laciniis tubo vix aequalibus, vexillo duplo brevioribus anguste lanceolatis acuminatis, superioribus vix 3 mm. longis; floribus flavis, 10-12 mm. longis; vexillo glabro praeter superne leviter pilosiusculo et nigro-punctato; legumine fere aequaliter oblongo, valde viscido-piloso.—Peru: Rainy-green shrub-wood, Mantaro Valley, near La Mejorada, Huancavalica, March 21, 1926, *Weberbauer 7606* (Type, Field Museum).

Apparently this species is most similar to *R. melanosticta* Griseb. of Argentina, from which it differs in its suffruticose base, viscous pubescence, large flowers, and long-pilose pods.

3. PERUVIAN SOLANACEAE

Nicotiana Leguiana, sp. nov., *N. tomentosae* peraffinis; foliis utrinque viridibus, subtus paullo pallidioribus haud incano-tomentosis, solum minute pulverulentis; floribus pedunculisque congestis in paniculam terminalem magnam dispositis; corollae limbo late 5-lobato; lobis ovatis subabrupte acutis, 3-4 mm. longis, dense pubescentibus.—Peru: Entre Cedrobamba y la Máquina, Valle de San Miguel, Cuzco, 20 de Julio de 1928, *Fortunato L. Herrera 1991* (Type, Field Museum). *Ollantaitambo*, Cuzco, *Pennell 13638*, *Herrera 240*. Urubamba Valley, *Herrera 1687*.—Bolivia: Sorata, *Bang 1625*. Coroico, *Bang 2408*.

Nicotiana Leguiana, native to southern Peru and adjacent Bolivia, has long been known to horticulturists of Europe and North America, under the name *N. tomentosa*, as a fine foliage plant where subtropical effects in landscapes are desired.

Nicotiana tomentosa R. & P. Fl. Peruv. 2: 16. pl. 129. 1799, is a species of central Peru with leaves even at maturity white-tomentose puberulent beneath and with flowers borne in a diffuse panicle of remote and spreading branches, not at all crowded. The corolla of *N. tomentosa* is entirely different from that of the plant described above; its limb is nearly truncate, the lobes being reduced to acute "points" about 1 mm. long. Specimens collected by me on the Marshall Field Botanical Expedition to Peru in 1923, and from the type locality, Muña, agree exactly with the description and plate of Ruiz and Pavón.

If one may judge from descriptions, *N. tomentosa* of horticulture is largely *N. Leguiana*, but apparently true *N. tomentosa* R. & P. has been grown as *N. colossea* André, Rev. Hort. 60: 511. 1888. The flowers of the latter were not described, but from the diagnosis it must be treated as a synonym of *N. tomentosa* R. & P. Its original character has probably been lost in the modification usually resulting to *Nicotianas* from cultivation and hybridization. However this may be, two distinct species exist today, as shown above, in a native state, and no name has been found certainly available for the one proposed as new. *N. otophora* Griseb. of southern Bolivia is related to the Peruvian species, but it has auricled leaves, loosely paniced flowers, and calyces twice as long (2-2.4 cm.).

Nicotiana Raimondii, sp. nov., ut videtur proxima *N. glaucae* sed folio pulverulento et corolla glabra; ramis foliisque subtus dense incano-pulverulentis; foliis supra viridioribus, minute granulo-pulverulentis, obtusis; pedunculis, pedicellis calycibusque dense puberulentis; calyce circa 5 mm. longo, dentibus aequalibus acutis, 1 mm. longis; corolla 3 mm. longa.—Peru: Urubamba Valley, Cuzco, July, 1927, *Herrera 1540* (Type, Field Museum) and *1685*. Ollantaitambo, Cuzco, *Pennell 13665*, *Herrera 233*.

At first glance this species appears to be *N. glauca* Grah., to which two of the specimens had been referred. That *Nicotiana*, however, is consistently, even in cultivation, glabrous and blue-glaucous, with only the flowers and calyces softly pubescent. The calyx teeth are longer. Apparently no other very close relative of this well-known tree *Nicotiana* has hitherto been described. Both *N. glauca* and *N. Raimondii* bear a superficial resemblance to *N.*

paniculata L., but the pubescence of the latter is in part viscid, and the shape of its corolla and calyx is fundamentally different.

Iochroma peruviana (Dunal), comb. nov. *Chaenesthes gesnerioides* (HBK.) Miers, var. *peruviana* Dunal in DC. Prodr. 13: 488. 1852. *I. gesnerioides* (HBK.) Miers, Hook. Lond. Journ. 7: 346. 1848, as to plant cited.

It seems evident, from description, that this plant, collected by Mathews at Chachapoyas, Dept. of Amazonas, Peru, is specifically distinct from *I. gesnerioides* (HBK.) Miers, known only from central Colombia. Its leaves are described as scarcely more than half as large (about 5 cm. long) and the pedicels as twice as long (about 4 cm.). The orange-red corollas are densely tomentose. The "short" calyx is a character which suggests that this species may rather be a *Dunalia*, but Miers, Hook. Lond. Journ. 7: 347. 1848, remarks "the berry . . . is almost enclosed by a persistent calyx of very similar form" (to *I. grandiflora* Benth.). This, of course, is the salient—and indeed the only—character of the genus *Iochroma*.

Dunalia campanulata (Lam.), comb. nov. *Cestrum campanulatum* Lam. Encycl. 1: 688. 1789. *Lycium aggregatum* R. & P. Fl. Peruv. 2: 45. pl. 182a. 1799. *Acnistus aggregatus* Miers, Hook. Lond. Journ. 4: 341. 1845.

This common and somewhat variable South American species has been regarded as the same as the shrub of the West Indies known as *Acnistus arborescens* (L.) Schlecht., but all the material I have seen from western South America differs uniformly in its scarcely or little exerted stamens and short flowering pedicels, only about 1 cm. long. The original of the Linnean species was based on a specimen of Plumier, and probably came from the West Indies, possibly from Martinique.

If the Peruvian species of *Acnistus* Schott and *Dunalia* HBK. are considered, it becomes evident that the generic characters upon which the genera have commonly been maintained—the clustered funnel-like flowers and unappendaged filaments of *Acnistus*, in contrast to the solitary or paired tubular flowers and appendaged filaments of *Dunalia*—no longer serve to define these two groups naturally. A number of species which were imperfectly known have now been redescribed by Dammer, Bot. Jahrb. 50: Beiblatt 111: 53–58. 1913, together with several new forms, with the result that evidently *Acnistus*, if it is to be maintained, must stand on one character alone, namely, the absence of filament appendages. For several

species of *Dunalia*—that is, species with tooth-like appendages on the filaments—have been described which have clustered flowers, as *D. Trianaei* Damm. or *D. spathulata* (R. & P.) Damm., while every degree of corolla form, from funnellform to tubular, is known, all species of *Acnistus* and *Dunalia* considered. One in particular, *A. dolichostylus* Bitter, Rep. Spec. Nov. 21: 85. 1925, has a narrowly funnellform corolla 2.5–3 cm. long and unappendaged filaments, which, however, are adnate below as in *Dunalia*. So the distinguished author of this species wrote: “Diese Art steht in der Tracht verschiedenen Angehörigen von *Dunalia* so nahe, dass man sie unbedenklich dieser Gattung anreihen könnte, wenn nicht das Fehlen zahnähnlichen Anhängsel am Grunde der Staubfäden dagegen spräche.” But he remarked also on the desirability of monographic treatment of the genera and called attention to the fact that, as in the case of his species, the fruit of many is unknown. It has been collected, however, in some instances, notably for the intermediate species *D. spathulata*, and it displays no character not found also in the fruit and calyx of *Acnistus*. Since, then, the presence or absence of appendages on the filaments is not a character for the natural division of the genus *Cestrum*, and as the character now is unsupported in *Dunalia* by other points of distinction, its continued use for maintaining the later-published *Acnistus* would seem purely arbitrary. Furthermore, the appendages themselves vary greatly in degree of development, from entire to toothed, from smooth to hairy, from short and scarcely discernible to greatly elongate.

The following changes in names for the *Dunalias* of Peru appear, then, to be necessary:

Dunalia Weberbaueri Damm., op. cit., 53.—Very near *D. obovata* and *D. lycioides* Miers, Hook. Lond. Journ. 4: 334. 1845, but the filaments are hairy at base and their appendages twice as long (6 mm.). It is known only from the type, other material so named being better included in *D. obovata* or, if Dammer's specific lines are correct, described as new, the appendages being obsolete. Miers' plant is similar but typically completely glabrous, even to the appendages.

Dunalia horrida (HBK.), comb. nov. *Lycium horridum* HBK. Nov. Gen. & Sp. 3: 52. 1818. *Lycium parvifolium* R. & S. Syst. 4: 698. 1819. *Lycioplesium horridum* Miers, Hook. Lond. Journ. 4: 331. 1845.

Distinguished from *D. obovata* and related species chiefly by its exceptionally small leaves, 8–12 mm. long and 4–5 mm. broad.

Its glabrous corollas are only 15–18 mm. long. From the specimen at Berlin-Dahlem it appears to be a very compact, gnarled shrub with many short branches.

Dunalia dolichostyla (Bitter), comb. nov. *Acnistus dolichostylus* Bitter, Rep. Spec. Nov. 21: 85. 1925.

This is altogether a typical *Dunalia* except that the filaments are unappendaged; compare the discussion under *D. campanulata*.

Dunalia solanoides (Dunal), comb. nov. *Codochochia solanoides* Dunal in DC. Prodr. 13: 482. 1852. *Acnistus multiflorus* Damm. Bot. Jahrb. 37: 636. 1906; Rep. Spec. Nov. 15: 393. 1919.

Dunalia umbellata (R. & P.), comb. nov. *Lycium umbellatum* R. & P. Fl. Peruv. 2: 45. pl. 182b. 1799. *Acnistus umbellatus* (R. & P.) Miers, Hook. Lond. Journ. 4: 342. 1845.

Rather similar in appearance to the preceding but less pubescent and the calyx 5-toothed. Both species were included in *Acnistus* because of the unappendaged filaments; but compare *D. dolichostyla* above.

Dunalia obovata (R. & P.) Damm. Bot. Jahrb. 50: Beibl. 111: 56. 1913.

Dammer has proposed several species which in general appearance are not distinguishable from this plant or from each other, basing them on character of the filament appendages and the presence or absence of pubescence within the corolla tube. As most of them are known only from single collections, more material is needed to discover whether these differences actually indicate the existence of specific entities, which seems doubtful. However, some comparative observations may be recorded.

Dunalia Besseri Damm., l. c. *D. angustifolia* Damm., op. cit., 54, is not, I think, distinct. The branchlets are old but at their tips they show traces of the tomentose puberulence which distinguishes *D. Besseri* and *D. spinosa* from other species. Except for the toothed filament appendages, the latter resembles the former.

Saracha pallascana (Bitter), comb. nov. *Saracha Weberbaueri* Damm. subsp. *pallascana* Bitter, Rep. Spec. Nov. 19: 267. 1924.

Readily distinguished from *S. Urbaniana* Bitt. & Damm. Rep. Spec. Nov. 17: 442. 1921, and *S. Weberbaueri* Damm. Bot. Jahrb. 37: 638. 1906, by its definitely shrubby habit, much smaller leaves, and greenish-white flowers, blue-based within. The two former

species are more nearly related to each other than to this one, but the first is ciliate pubescent in the manner of the smaller-flowered *S. ciliata* Miers and has shortly acute leaves, while the second is glabrous or essentially so and has leaves which are gradually long- or even caudate-acuminate.

As Miers pointed out in Ill. S. Am. Pl. 2. App. 57. 1857, the type of *Saracha* R. & P. is *Poecilochroma punctata* (R. & P.) Miers. Consequently the "proper" generic name for the latter is *Saracha* and the synonymous *Bellinia* R. & S. Syst. 4: 687. 1819 must be revived for *Saracha*, as that genus has been accepted. But sooner or later conservation by agreement will support common sense, as it has done so frequently in similar cases, and legalize the continued use of the name *Saracha* in the long-accepted sense. So in the meantime I shall disobey the International Rules in fact while complying with them in spirit. It is interesting that, though Miers took up *Witheringia* for *Saracha* (thinking it to be synonymous), he later retracted his own action, op. cit. 148-149.

Hebecladus propinquus (Miers) Bitter, var. **parviflorus** Bitter, Rep. Spec. Nov. 17: 250. 1920. *H. Weberbaueri* Bitter, op. cit. 20: 372. 1924.

Except for a somewhat denser habit and pubescence, *H. Weberbaueri* seems to resemble the variety of *H. propinquus*. If it is actually a species, it requires a new name because of the existence of *H. Weberbaueri* Damm. Bot. Jahrb. 37: 638. 1906. But except for the puberulent stems, the latter seems to be the same as *H. intermedius* Miers, Hook. Lond. Journ. 4: 323. 1845.

Lycianthes cutacensis (HBK.), comb. nov. *Solanum cutacense* HBK. Nov. Gen. & Sp. 3: 38. 1818.

This is a *Lycianthes* and, at least among Peruvian species, resembles most *L. acutifolia* (R. & P.) Bitter, Abhandl. Nat. Ver. Brem. 24: 453. 1920, and its very close relatives, *L. tarmensis* Bitter, op. cit. 451 and *L. Weberbaueri* Bitter, op. cit. 446. It differs from all these in its smaller (4 cm. long or less) leaves, longer petioles, shorter calyx teeth, and unequal filaments. It is known only from the type, from the Department of Piura, Peru.

The two species described by Bitter are doubtfully distinct from the Ruiz and Pavón plant, but as we yet have only the original collection of the latter, its range of variation is, of course, entirely unknown. From the single specimens available, then, in each case, the Bitter plants appear to be distinguishable by their ovate- rather

than linear-lanceolate leaves. Also, *L. Weberbaueri* has larger, hairier flowers; in this respect it differs, too, from *L. tarmensis*, from which it is further distinguished by the less pubescent leaves, especially above.

Lycianthes hypomalaca Bitter, Abhandl. Nat. Ver. Brem. 24: 344. 1920.

This is obviously distinguishable from *L. glandulosa* (R. & P.) Bitter only by the somewhat more stellate-tomentose younger branchlets and more gradually acuminate leaves. The flowers may be a little larger. It seems probable that more collections will prove the existence of but one, perhaps somewhat variable, specific entity.

Solanum Tafallae, nom. nov. *S. multifidum* R. & P. Fl. Peruv. 2: 37. pl. 171. 1799, not Lam. Ill. 2: 17. 1797.

This plant from southern Peru may be named for the collector and artist, Juan Tafalla, since the name *multifidum* given it by Ruiz and Pavón was already borne by another, and valid, species.

Solanum diffusum R. & P. var. **miozygum** (Bitter), comb. nov. *S. diffusum* R. & P. subsp. *miozygum* Bitter, Bot. Jahrb. 54: Beibl. 119: 14. 1917.

It seems to me that varietal rank expresses more satisfactorily the relationship of this variant to the typical form of *S. diffusum*, since it does not differ essentially except in fewer (2-3) pairs of leaflets. It is from the same region in Peru as the type.

Solanum maleolens, nom. nov. *S. foetidum* R. & P. Fl. Peruv. 2: 39. 1799, not Rottb. Act. Lit. Univ. Hafn. 1: 287. 1778.

It is not at all clear, if one may judge from the original description, that this Peruvian species is closely related to *S. caavurana* Vell., as suggested by Dunal (though he had not seen the type) in DC. Prodr. 13¹: 147. 1852. Material apparently referable to *S. foetidum* R. & P., collected by the Marshall Field Botanical Expedition to Peru at Tarma, the type locality, is entirely different from the Brazilian plant of Vellozo. It has ovate leaves, subumbellate inflorescences, and huge orange berries, as described.

Solanum patulum Pers. f. **album**, f. nov., e f. *typica* differt corollis albis.—Peru: Tambo de Vaca, Dept. of Huánuco, *Macbride 4441* (Type, Field Museum).

The typical form of this beautiful showy-flowered shrub or small tree of the lower and eastern Peruvian Andes has violet or wistaria-

colored blossoms. There is a good description of it by Bitter, Bot. Jahrb. 54: Beibl. 119: 8. 1916. I collected it at Tambo de Vaca (4351), where the white-flowered form was occasional. A native name is "urahuacta." Apparently these collections are the first since the original ones by Ruiz and Pavón near Muña.

Solanum amblophyllum Hook. Bot. Misc. 2: 231. 1831. *S. hypostichopogon* Bitter, Rep. Spec. Nov. 16: 95. 1920.

With a number of collections before me, including *Pennell 14418* from Obrajillo, Peru (the type locality of Hooker's plant), my own 568 from Viso, and others in the herbarium at Berlin-Dahlem, Bitter's suggestion that his proposed species might prove to be only a small-flowered subspecies of Hooker's seems to have been extraordinarily well taken, for I am unable to detect even a varietal difference. If there is ever a slight modification in the size of the flowers (the character stressed by Bitter), it seems reasonable to conclude that it is an individual variation perhaps due to altitudinal conditions, drouth or what not.

Cyphomandra crassifolia (Ortega), comb. nov. *Solanum crassifolium* Ortega, Dec. 9. 117. 1797. *S. betacea* Cav. Ic. 6: 15. pl. 524. 1801. *C. betacea* Sendt. Flora 28: 172. pl. 6. 1845.

Apparently the well-known "tree tomato" has never been christened properly, that is, according to the rules of botanical nomenclature.

Brunfelsia bonodora (Vell.), comb. nov. *Besleria bonodora* Vell. Fl. Flum. 261. 1825; Ic. 5: pl. 80. 1827. *Franciscea latifolia* Pohl, Pl. Bras. Ic. 1: 3. pl. 1. 1827. *Brunfelsia latifolia* Benth. in DC. Prodr. 10: 199. 1846.

Somewhere Bentham, perhaps in the introduction to his revision of *Cassia*, remarks that with good reason all of Vellozo's names could be ignored. This feeling will always arouse much sympathy, but nevertheless, as when Bentham wrote, many Vellozo names are accepted. Indeed, when there exists no doubt as to their application, and they have clear priority, acceptance must be a matter of course. The many that are dubious will remain, it is hoped, in the questioned synonymy to which Bentham and others have rightly relegated them. But there are others, as this *Brunfelsia*, which appear to be definitely designated—in this case the application of the name has never been doubted, I think—and so, in accord with custom, the Vellozo name should be used rather than the later-published one of Pohl.

4. OTHER PERUVIAN PLANTS, CHIEFLY NEW SPECIES

Carex hypsipedos Clarke, Bot. Jahrb. 37: 518. 1905. *C. umbellata* Schk. var. *depressa* Kükenth. Pflanzenr. 38: 453. 1909.

I am indebted to Mr. R. Gross, the diligent student of the Cyperaceae at Berlin-Dahlem, for calling my attention to the fact that the above names for this interesting species are based on the same collection, namely *Weberbauer 2617* from La Oroya, Peru. Professor Kükenth, l. c., does not seem to have accounted for Clarke's name. I think the plant is a good species. Its leaves are very much shorter (about 3 cm. long) than in any form of *C. umbellata*, the achene is scarcely beaked and, particularly, the scales are distinctly three- rather than one-nerved. These characters, together with the difference in appearance and the quite remote habitat, serve surely to distinguish *C. hypsipedos* specifically from *C. umbellata* and its varieties. Its aspect, in general, is nearly that of *C. brachycalama* Griseb., a species vastly different from a critical standpoint. It is evidently an outlying specific unit of an otherwise entirely north-temperate group.

Carex fecunda Steud. Syn. Cyp. 194. 1855.

An extreme state of this species has been collected in the Department of Cuzco, Peru, by Herrera (1099) which represents *C. atropurpurea* Boeckl. Linnaea 39: 150. 1875. It so emphasizes the characters of the Boeckeler plant—red-purple rather than brownish scales and perigynium and subovate, sessile or subsessile and crowded, rather than oblongish and remote, spikes—that it is not altogether satisfactory to regard it as identical with *C. fecunda*. On the other hand, *Weberbauer 3996* from Cajamarca appears to be an intermediate, as it has the dark color of Boeckeler's form but nearly the inflorescence of Steudel's. The former, apparently, should be recognized as a form or variety of the latter.

Dichromena exaltata (Kunth), comb. nov. *Rynchospora exaltata* Kunth, Enum. Pl. 2: 291. 1837.

I find that this Brazilian species, omitted from my recent list of Dichromenas known to grow in Peru (Field Mus. Bot. 4: 165-167. 1929) is represented from the montaña of that country (Hacienda Schunke, La Merced) by my number 5750. The material seems to match well this species as it has been interpreted by Clarke in the Berlin-Dahlem herbarium.

Dichromena locuples (Clarke), comb. nov. *Rynchospora locuples* Clarke, Bot. Jahrb. 34: Beibl. 78: 5. 1904.

This Ecuadorian species is apparently represented from Peru for the first time by my number 4109 from Mufia, Department of Huánuco. The determination has been kindly confirmed by Mr. R. Gross at Berlin-Dahlem.

Dimerocostus bicolor, sp. nov., *D. unifloro* similis; caulibus erectis glabris 2 m. altis; foliis superioribus breve petiolatis oblongo-lanceolatis sensim acute acuminatis supra glabris viridibus subtus dense adpresseque argenteo-pubescentibus circa 2 dm. longis et 4 cm. latis; floribus ignotis; capsula vix coriacea; semina irregulariter quadrata nitido-nigra circa 4 mm. lata.—Peru: Shady ravine, Hacienda Villcabamba, Río Chinchao, July 17–23, 1923, *Macbride* 5001 (Type, Field Museum).

Except as noted, this plant appears to match the type of *D. uniflorus* (Poeppig) Sch. (*Costus uniflorus* Poeppig ex Peters. Fl. Bras. 3: 58. 1890), which came from Yurimaguas, Peru, and evidently is the same as *Eggers* 14992 from Ecuador, as determined by Professor Loesener. The leaves of the latter are sessile, oblong-elliptical, caudate-acuminate, and green on both sides although obscurely hirsutulous beneath, the caudate tips densely so with somewhat spreading hairs. The narrower, shortly petioled leaves of *D. bicolor* are silvery beneath with a very close indument which even at the leaf tips is scarcely hirsutulous. The subquadrate, very lustrous black seeds are in contrast to the "canescent-black ellipsoid" ones of *D. uniflorus*. Therefore, with no intermediate specimens before me, it seems necessary to regard my collection as representing a distinct species.

Pourouma folleata, sp. nov., arborea(?); ramulis junioribus leviter angulatis, glabratibus; petiolis adpresse setulosis mox glabratibus gracilibus, 2–3 cm. longis; foliis integris vel leviter repando-undulatis, ellipticis, basi acutis, apice subabrupte brevissimeque acuminatis, majoribus circa 12 cm. longis et 6 cm. latis, chartaceis, supra viridibus laevibus glabris vel in costa plus minusve strigillosis, subtus albidis inter costulas plerumque 15 breviter tomentellis, costa costulisque dense adpresseque strigillosis; stipulis subflavo-villoso-sericeis 2.5 cm. longis; pedunculis inflorescentiarum 1.5 cm. longis; inflorescentia masculina composito-cymosa, griseo-ochraceo-hirtella; floribus tenuiter pedicellatis subfasciculatis haud capitulato-confertis; perigynio ut videtur ad basin partito paullo hirtello, segmentis lineari-subulatis acuminatis; antheris subglobosis.—Peru: Chanchamayo Valley, Dept. of Junin, *Carlos Schunke* 416 (Type, Field Museum).

The comparatively loose inflorescence and the smooth upper leaf surfaces of this species are two characters which, combined, seem not to have been described for any other *Pourouma*. The leaves are falsely plicate or, with a little imagination, "baggy," to which feature the name may refer, if not as well to the open flower clusters.

Suaeda insularis (Britton), comb. nov. *Dondia insularis* Britton, Bull. N. Y. Bot. Gard. 4: 138. 1906.

This species is represented in duplicate in the collection made by Dr. and Mrs. Millspaugh in the Bahamas in 1911 and, according to the International Rules of Botanical Nomenclature should be called a *Suaeda*.

Cleome gigantea L. Mant. 430. 1771.

C. Kerberi Briq. Ann. Conserv. & Jard. Bot. Genève (*C. monochroma* Macbr. Field Mus. Bot. 4: 169. 1929) is merely a variant of this ancient species. I did not associate the specimens I described with the plant of Linnaeus because the latter has been characterized as a shrub and as much more pubescent. However, the species apparently flowers as a biennial and varies in degree of pubescence and size of flowers.

Ribes hirticaule, sp. nov., fruticosum, 2 m. altum; caulibus foliosissimis dense cum pilis longissimis fulvis firmiusculis non vel vix glandulosis etiam pilis albis minutis crispis intermixtis pubescentibus; stipulis conspicuis margine apiceque longe ciliatis circa 1 cm. longis; petiolis circa 4 cm. longis; foliis cordato-ovatis valde trilobatis irregulariter serratis plerumque circa 10 cm. longis et 12 cm. latis firmo-membranaceis supra glabris vel parce cum pilis albis minutis et etiam fulvis firmis longioribus pubescentibus subtus pallidioribus leviter cinereo-pubescentibus praecipue ad nervos nervulosque et cum pilis aliquid fulvis longioribus intermixtis, lobis acutis vel subacuminatis vel interdum lateralibus obtusiusculis; racemis 1-1.5 dm. longis conspicue bracteatis, bracteis oblongo-lanceolatis vel anguste obovatis (basi chartacea) superne parce denticulatis ad anthesin fere 1.5 cm. longis; pedicellis 3-5 mm. longis; bracteolis circa 3 mm. longis; floribus igneo-rubris plus minusve (cum pedicellis) cinereo-pubescentibus haud glandulosis 5-6 mm. longis tubuloso-campanulatis, sepalis apice acutis subcucullatis; petalis oblongis 1 mm. longis; staminibus (in floribus feminis) subaequalibus cum petalis insertis circa 1 mm. longis; ovario dense glandulo-hirsuto.—Peru: In evergreen shrub-wood, Putis, Chaimacota Valley, Dept. of Ayacucho, February 27-March 12, 1906, *Weberbauer 7529* (Type, Field Museum).

Strikingly distinct from *R. albifolium* R. & P. and *R. macrobotrys* R. & P., its nearest apparent relatives, by the almost shaggy, reddish, hirsute stems. It also lacks the stipitate glands of those species, and the petals are larger.

Ribes praecox, sp. nov., fruticosum vel subarboreum; ramulis tortuoso-ramosis obscure pulverulentis demum glabris et nitidis; foliis paucis cum floribus productis, novellis breviter (circa 0.5 cm.) petiolatis plus minusve praecipue subtus dense cum glandulis flavis sessilibus glanduliferis subtus etiam minutissime puberulis supra ruguloso-reticulatis, denticulatis et ut videtur obscure vel interdum late trilobatis, ovato-rotundatis, circa 1 cm. longis; racemis cinereo-pulverulentis et minutissime cum glandulis sessilibus glandulosis densifloris 1-1.5 cm. longis; bracteis ovato-oblongis superne 1-3-denticulatis circa 2 mm. longis; pedicellis 1.5-2 mm. longis; bracteolis circa 1 mm. longis; floribus viridi-luteis breviter campanulatis 3-3.5 mm. longis, sepalis valde reflexis apice acute subcucullatis; petalis distincte obovatis paullo exsertis 1.5 mm. longis cum staminibus aequalibus insertis; staminibus (in floribus masculinis) 1.5 mm. longis; fructibus ignotis.—Peru: Shrubby tree of rock fences and cliffs, Llata, Dept. of Huánuco, August 21, 1922, *Macbride & Featherstone 2251* (Type, Field Museum).

Although the relationship of this shrub is not clear to me, it seems to be undescribed. In aspect it somewhat suggests *R. glandulosum* R. & P. and allies (cf. Janczewski, Monogr. Gros. 258. 1907), but the petals and stamens are inserted equally. Among species possessing this character there appears to be none so completely lacking in stipitate glands and at the same time with prominent petals. The sessile glands suggest that it belongs in the section *Euparilla* Jancz., l. c., but the glands are minute and not punctately sessile, and the foliage of the members of that group is different. If the plant is not dioecious it is comparable, in Janczewski's treatment, to *R. sucheziense* Jancz., from which it differs decidedly in flowers and foliage. The young ovaries in the flowers examined appear to be infertile.

Ribes incertum, sp. nov., fruticosum ad 1 m. altum, fere ubique glabrum; ramulis numerosis brevibus; foliis terminalibus congestis late oblongis ut videtur sessilibus ad basin vix vel haud angustatis apice breviter obtuse denticulatis firmis subtus obscure 3-nerviis; racemis valde reductis 1-3-floris; floribus viridi-luteis brevissime pedicellatis haud stipitato-glandulosis minutissime pulverulentis campanulato-rotatis 4 mm. longis, sepalis vix acutiusculis; petalis oblongis vel oblongo-spathulatis fere 1 mm. longis cum staminibus inaequalibus (semper?) insertis, staminibus non longioribus, antheris conspicuis.—Peru: In slide rock, Pomopampa, east of Huaraz,

Dept. of Ancash, October 4, 1922, *Macbride & Featherstone 2493* (Type, Field Museum).

This shrub is obviously very similar to *R. cuneifolium* R. & P., but it is perhaps distinct by virtue of its somewhat oblong leaves and yellowish flowers with unequally inserted stamens and petals. The Ruiz and Pavón species with cuneate-flabelliform leaves is typically represented by my number 2982 from Río Blanco. The name of the species proposed here refers to the precarious existence of the shrub in moving slide rock at an altitude of about 4,500 meters; if not to its dubious specific standing!

Rubus sparsiflorus [Focke], sp. nov., mediocriter robustus et molliter villosus, circa 1 m. altus; ramis subangulatis parce et breviter aculeatis, aculeis recurvis; foliis submembranaceis, ternatis vel interdum quinatis; petiolis plerumque 6–10 cm. longis gracilibus plus minusve dense aculeatis; stipulis lineari-lanceolatis, fere 1 cm. longis, longe persistentibus; foliolis ovatis, basi rotundatis vel subtruncatis, apice subabrupte acuminatis aequaliter serrulatis, plerumque 6 cm. longis et 3.5 cm. latis vel majoribus 8 cm. longis et 5.5 cm. latis, supra viridibus demum glabratibus et paullo nitidulis, subtus pallidioribus et praecipue ad nervos nervulosque plus minusve subadpresso villosis, utrinque 10–12-nerviis; nervis solum mediocriter prominentibus vel supra vix notatis; racemis 2–4 cm. longis, axillaribus terminalibusque, 3–6-floris; floribus intense roseis, 1.5–2 cm. latis; pedicellis vix 5 mm. longis dense fulvo-villosis haud glandulosis; sepalis ovato-lanceolato-acuminatis, utrinque pilosis demum patentibus; carpellis satis numerosis (10–circa 15) circa 5 mm. longis, glabris vel ad apicem parce pilosis. Peru: Grass-shrub slopes, Mito, Dept. of Huánuco, July 8–22, 1922, *Macbride & Featherstone 1674*, two sheets (Type, Field Museum). Above San Miguel, Dept. of Cajamarca, May 7, 1904, *Weberbauer 3940*.

Because of its axillary few-flowered racemes, this plant is a member of the section *Dissitiflora* Focke, according to that author's treatment of the subgenus *Eubatus*, *Bibliotheca Botanica* 83. 3: 49. 1914. It differs at once from the known species of this group in its villous pubescence. Possibly it can be treated as a variety of *R. floribundus* of the section *Floribundi*, characterized by terminal inflorescences, a disposition suggested by Professor Focke on the herbarium sheet of the Weberbauer specimen. But the few-flowered lateral racemes are scarcely the result of interrupted growth, as he thought possible, since my collections, in both flower and fruit, confirm the constancy of this character. The plant seems, therefore, actually to be a third species of the section *Dissitiflora*.

In naming my Peruvian collections of *Rubus* I found that one must either propose several new species or interpret more broadly

the concepts of those already described. Inasmuch as *Rubus* in Peru evidently maintains its well-known reputation in the production of many perplexing combinations of characters, it may be preferable to follow the latter alternative, with the result that the following changes in nomenclatorial rank seem necessary.

***Rubus roseus* Poir. var. *Lechleri* (Focke), comb. nov. *R. Lechleri* Focke, Abh. Nat. Ver. Bremen 4: 161. 1874.**

The characters of this plant—its more or less paniculate and shortly peduncled flowers—are not constant. A recent collection is *Pennell 13831* (as in Field Museum) from the Dept. of Cuzco, Peru. Another variant, characterized particularly by smaller flowers borne as in variety *Lechleri* and by somewhat more dentate stipules is

***Rubus roseus* Poir. var. *santarosensis* (Ktze.), comb. nov. *R. santarosensis* Ktze. Rev. Gen. 3²: 80. 1898.**

***Rubus Weberbaueri* Focke, Bibliotheca Bot. 72. 1: 38. 1910.**

This beautiful species is represented now from Tambo de Vaca, Dept. of Huánuco, *Macbride 4393*. *R. nubigenus* HBK. subsp. *Ruizii* Focke, Abh. Nat. Ver. 4: 162. 1874, collected by Ruiz at Pillao, appears to me to be typical *R. Weberbaueri*.

***Rubus floribundus* HBK. Nov. Gen. & Sp. 6: 219. 1823.**

It does not seem to me that *R. boliviensis* Focke, Abh. Nat. Ver. Bremen 4: 158. 1874 is more than a sometimes sturdier, hairier race or possibly variety of this plant. The size of the flowers varies. It is the most common species in the Andes of Peru and naturally may be expected to be variable in characters of foliage and pubescence. Probably several other "species" should be included in this one. Perhaps it hybridizes with *R. bogotensis* HBK. and *R. urticaefolius* Poir., with which species I have found it growing. I have the following intermediate collections for which no name seems to be available; and as they apparently have mostly the character of *R. floribundus*, except for the presence of a few glandular or non-glandular setae on the upper branches (which suggests a relationship to the two species just mentioned), they may be treated as

***Rubus floribundus* HBK. var. *nimbatus*, var. nov., plus minusve molliter villosus; ramulis superne plus minusve cum pilis setosis interdum glandulosis etiam strigillosis pubescentibus.—Peru: Huacachi, near Muña, Dept. of Huánuco, May 20–June 1, 1923, *Macbride 3894* (Type, Field Museum). Yanahuanca, Dept. of**

Huánuco, *Macbride & Featherstone 1218*. Villcabamba, Hacienda on Río Chinchao, Dept. of Huánuco, *Macbride 5200*.

Kallstroemia caribaea Rydb. N. Amer. Fl. 25: 111. 1910.

This variant of the typical form of *K. maxima* (L.) Wight & Arnott, is distinguishable constantly only by its strigose fruit. Known heretofore only from as far south as Colombia, it has been collected recently in the Department of Piura, Peru, by Oscar Haught (*F-161* and *F-51*). Like the glabrous-fruited type, it exhibits some variation in length of pedicels and breadth of sepals, but these seem clearly to be individual differences as they are not correlated with each other or with characters of flowers or fruit. I think, therefore, that *K. caribaea* merits only varietal recognition since it possesses but a single character and that one of pubescence. Study of the two forms where they grow in the same region will probably determine their relationship definitely.

Fagara tumbezana, sp. nov., arborea 8 m. alta; ramis glabris ut videtur paullo vel haud armatis; ramulis novellis foliisque utrinque breviter et molliter plus minusve pilosis; foliis densis valde inaequalibus, petiolo teretiusculo supra complanato subtus aculeis flavescens internum sparse obsito suffultis; foliolis breviter petiolatis 3-4-jugis oblongo-ellipticis vel internum subovato-ellipticis breviter acuminato-acutiusculis basi obtusis obliquis margine haud vel minutissime crenulatis, 3-5 cm. longis et 1.5-2 cm. latis sed plerumque circa 8 cm. longis 3 cm. latis, chartaceo-coriaceis, nervo medio lateralibusque cum venis reticulatis utrinque paullo prominentibus; paniculis subracemosis axillaribus minute pilosis circa 4 cm. longis; pedicellis gracilibus 3 mm. longis; calycis laciniis ovatis circa 0.5 mm. longis; petalis 5 anguste ovato-oblongis 2 mm. longis glabris; filamentis quam petala vix brevioribus; antherae cordatae conspicuae; ovarii rudimento trigono in stylum brevem attenuato.—Peru: Mountains east of Hacienda Chicama, Dept. of Tumbes, *Weberbauer 7642* (Type, Field Museum).

There are comparatively few softly pubescent *Fagaras*, and this species does not seem to be particularly allied to any of them. Rather, it is perhaps related to the glabrous or lightly pubescent *F. Riedeliana* Engler, which has been found in Ecuador and, apparently, also in Peru. *F. tumbezana* comes from a part of Peru which is especially rich in endemic species, many of them discovered by Professor Weberbauer. They probably will be found to grow in some part of Ecuador, the flora of which is practically unknown.

Esenbeckia Warscewiczii Engler in Mart. Fl. Bras. 12²: 148. 1874.

This little-known species, collected more than half a century ago in northern Peru, has been found recently by Professor Weberbauer in the mountains east of the Hacienda Chicama, Dept. of Tumbes (7645). It is a shrub about 4 m. high with dark violet flowers. His 7110 from Cajamarca is probably the same.

Heteropteris nervosa Juss. var. **Lessertiana** (Juss.), comb. nov. *H. Lessertiana* Juss. Arch. Mus. 3: 462. 1843. *H. suberosa* (Willd.) Griseb. var. *Lessertiana* Juss. ex Griseb. in Mart. Fl. Bras. 12: 69. 1858.

The specific name *nervosa* Juss. was published in St. Hilaire's *Flora Brasiliensis* in 1832 and therefore must supplant the better-known but later published *suberosa*, which was only an herbarium name until taken up in 1839 by Grisebach in *Linnaea* 13: 229. There is a still earlier name, *Banisteria eglandulosa* DC. Prod. 1: 590. 1824, but not *H. eglandulosa* Juss., which is another and possibly, if not probably, a valid species proposed previously to that of DeCandolle.

The application of the generic names *Heteropteris* HBK. and *Banisteria* L. has been discussed by Fawcett and Rendle in their *Flora of Jamaica* 4: 232. 1920, and by Niedenzu in his detailed monograph, *Pflanzenr.* IV. 141: 386. 1928. It is evident that the continued acceptance of these groups in the sense of HBK., Jussieu, and all authors to 1910, is arbitrary and invalid technically under accredited rules of nomenclature, but it is equally obvious that any reassignment of the names (as proposed, for instance, by C. B. Robinson and followed by Small, *N. Amer. Fl.* 25, pt. 2) would result in much confusion and inconvenience not only for present students but for those of the future. This seems clearly to be a case where strict adherence to rules would void common sense. In disobeying the rules in this instance I may be accused of failing to practice what I preach,¹ but when absurdity is the price of obedience one may be expected to refrain from action which could be defined only as ridiculous.

Heteropteris orinocensis (HBK.) Juss. var. **eglandulosa** (Juss.), comb. nov. *H. eglandulosa* Juss. in St. Hil. Fl. Bras. 3: 27. 1832. *H. acutifolia* Juss. var. *eglandulosa* Ndz. Arb. Bot. Inst. Lyc. 50. 1903.

Banisteria sanguinea Juss. var. **Benthamiana** (Juss.), comb. nov. *B. Benthamiana* Juss. Malp. Syn. 281. 1840.

¹Cf. Journ. Wash. Acad. Sci. 19: Nos. 12 and 14. 1929.

This variety differs from the typical form of the species in the glandular calyx and smaller leaf glands, 4-6 in number. These are differences common to many *Banisterias*, yet Niedenzu recognizes *B. Benthamiana* as a distinct species. Several which he treats as varieties of earlier described forms, for instance the variety *grata* (Griseb.) Ndz. of *B. laevifolia* Juss., might have been maintained as distinct, it would seem, with more reason.

Tetrapteris crispa (Rich.) Juss. var. ***punicans***, var. nov., foliis late elliptico-ovatis, 1.5-2 dm. longis, 1.2-1.5 dm. latis; petiolis plerumque circa 2 cm. longis; petalis 5-6 mm. longis.--- Peru: Muña, Dept. of Huánuco, *Macbride 3904* (Type, Field Museum).

This variant has the small flowers of the related species, *T. magnifolia* Griseb., but the mature samaras are dorsally winged as typical for *T. crispa*. The yellow flowers as well as the fruits are tinged with red. The variety *subcordata* Ndz. resembles our plant only in its broad-based leaves.

Tetrapteris Triopteris, nom. nov. *T. crispa* (Rich.) Juss. subsp. *pseudotriopteris* Ndz. Arb. Bot. Inst. Lyc. 4: 16. 1912.

As Niedenzu points out, the fruit of this Peruvian plant, being essentially 3- instead of 4-winged, is nearly that of a species of *Triopteris*. In other respects, however, it shows an apparently close relationship to *Tetrapteris*, and its existence might be used reasonably enough as an argument for the union of the two genera. From a practical standpoint, however, the genera are distinct, in character of foliage, in range, and, except for this single aberrant species, in character of fruit.

With reluctance I have altered Dr. Niedenzu's name *pseudotriopteris* in order to gain a shorter species name and at the same time retain the author's evident purpose in letting the name suggest the salient character of this unusual *Tetrapteris*. I believe there is no provision in the International Rules requiring the use without modification of a name of lower rank than species when the status of the plant concerned is changed.

Vochysia Leguiana, sp. nov., arborea magnifica; ramulis foliis subtus ramulisque inflorescentiarum dense cum pilis ferrugineis hirsutulo-villosis; foliis sessilibus vel brevissime petiolatis, ut videtur fasciculatis, oblongo-obovatis vel elongato-ellipticis, apice rarius rotundatis, saepius abrupte acuminatis, basi sensim angustatis, majoribus circa 1.5 dm. longis, 7 cm. latis, supra haud nitidis primo minute et obscure strigillosis demum glaberrimis, subtus imprimis ad nervos dense rufo-piloso-hirsutis; nervis supra mediocriter impres-

sis, subtus valde prominentibus praecipue mediano et secundario; venis ramuloso-reticulatis; inflorescentia cylindrica densiflora, 1–1.5 dm. longa cincinnis pedunculatis solum 1-floris; alabastris oblongo-ellipticis apice rotundatis, circa 1.5 cm. longis; calycis leviter hirsutuli laciniis quatuor inaequilongis late ovatis acutis, calcare patentissimo vel deflexo cylindrico paullo incurvo calyce duplo longiore; ovario dense hirsuto.—Peru: Chanchamayo Valley, Dept. of Junín, *Carlos Schunke 434* (Type, Field Museum).

Apparently no other species of *Vochysia* has the dense villous-hirsute, not at all tomentose pubescence which so strikingly characterizes this Peruvian one. Certain Brazilian species are reddish-hairy but also tomentose. If one may judge from the small branch collected, the bark does not exfoliate. The showy flowers are yellow.

In associating with this handsome tree of the Peruvian montaña the name of the distinguished President of Peru, I record appreciatively his well-known interest in scientific and educational endeavor.

***Mauria denticulata*, sp. nov.**, fruticosa 3 m. alta; ramis glabris; foliis 3-jugis rarissime unifoliatis; foliis plus minusve praecipue ad apicem irregulariter mucronulato-denticulatis ovato-lanceolatis basi subacutis vel cuneato-obtusis interdum obliquis apice sensim in acumen longiusculum acutum angustatis circa 10 cm. longis et 3.5 cm. latis, 2–3 mm. longe petiolatis, subcoriaceis supra glabris vel costa media (leviter impressa) obscure pulverulenta, subtus in axillis nervorum cum pilis erectis firmiusculis fulvis dense pubescentibus caeterum glabris; nervis lateralibus subtus reticulato-ramulosis prominentibus paniculis subsessilibus leviter hirtellis multi- sed laxifloris ad 1.5 dm. longis; pedicellis circa 2 mm. longis; staminibus 10 inter lobos disci subannularis crenato-10-lobi insertis circa 1 mm. longis, antheris filamento libero subaequalibus.—Peru: Shrub in evergreen subxerophytic bush-wood, Choimacota Valley, Dept. of Ayacucho, February 28–March 10, 1926, *Weberbauer 7546* (Type, Field Museum).

One or two species of the small genus *Mauria* have obscurely or remotely serrulate leaflets, but they are essentially subentire, so inconspicuous are their indentations. The leaflets of this shrub are sharply denticulate. This character seems to mark it as a distinct species, especially in conjunction with the dense tufts of coarse reddish hairs in the axils of the principal leaf nerves beneath. The axillary hair tufts, however, are known to occur sometimes in two or three other species but, in comparison, they are very meager in development. Of course, the range of variation in this and other respects of the species described recently from Peru is quite unknown.

***Ilex caniensis*, sp. nov.**, fruticosa, 1.5–2 m. alta; ramis longitudinaliter striatis, sordide griseis; ramulis annotinis subangulatis cum

petiolis (junioribus) pedicellisque plus minusve dense hirtellis; foliis glabris densis ellipticis elliptico-oblongis vel interdum late obovatis basi rotundatis vel paullo angustatis apice rotundato-obtusis vel mucronulato-acutiusculis, 3–4.5 cm. longis (plerumque 3.5) et circa 2–2.5 cm. latis, breviter (2–3 mm.) petiolatis, ad basin vix revolutis integris ad apicem acutiuscule serrulatis crasso-rigido-coriaceis supra nitidis subtus opacis paullo pallidioribus epunctatis, nervis lateralibus (5–6) supra vix prominulis leviter impressis subtus laxe ramuloso-reticulatis cum costa mediocriter prominentibus; pedunculis 1–3-floris ad 2 mm. longis; pedicellis 1–2 mm. longis; floribus 5–6-meris albis majusculis; calycibus 3 mm. latis, lobis fere rotundatis obscure parceque ciliatis; corolla subrotata, petalis ellipticis 3–3.5 mm. longis, 2.5 mm. latis; staminibus subexsertis, antheris filamentis longioribus.—Peru: Grassy slopes, Cani, Dept. of Huánuco, April 16–26, 1923, *Macbride 3455* (Type, Field Museum).

Most nearly related, according to Loesener's detailed and careful monograph of the family, to *I. uniflora* Benth., from which glabrous shrub it is readily distinguishable by the pubescence and by the longer (in proportion to breadth) leaves. Among the species with punctate leaves it most resembles *I. scopulorum* HBK., which is merely puberulent and has obscurely veined foliage. Other species to which it conceivably might be compared, for instance *I. Kunthiana* Triana, differ more widely in size or shape of leaves, petiole length, or in other respects. The comparatively few species described since the appearance (1908) of the second part of Loesener's work are mostly represented in the collection at Berlin-Dahlem.

Hippocratea opacifolia, sp. nov., arborea glaberrima; ramulis teretibus dense lenticellosis; foliis oppositis, breviter (2–3 mm.) petiolatis, oblongo-ellipticis basi gradatim attenuatis apice subabrupte et obtuse caudato-acuminatis, plerumque 13–16 cm. longis et 5– fere 6 cm. latis, chartaceis vix vel paullo nitidulis ut videtur griseo-viridibus et opacis obscure et remote undulato-denticulatis, costa media utrinque prominula, nervis lateralibus circa 6 supra vix notatis subtus prominentibus et venis plus minusve ramoso-reticulatis; inflorescentiis 3–5 cm. longis in foliorum axillis vel extra-axillaribus repetito-dichotomo-furcatis gracilibus et laxiusculis; pedunculo communi ad 3 mm. longo; bracteis ovatis acutis leviter denticulatis; calycis laciniis 5 fere rotundatis haud acutis vix 1.5 mm. longis; petalis suborbiculatis breviter unguiculatis 2.5 mm. longis, glabris minutissime erosis; staminibus 3 intra discum pulvinari-annularem 2 mm. diam. insertis, filamentis circa 0.5 mm. longis, antheris filamento latioribus subreniformibus; ovario disco et staminibus incluso sed libero, obscure 3-lobo haud in stylum angustato, 3-loculari, ovulis in loculo circa 3.—Peru: Chanchamayo Valley, Dept. of Junín, *Schunke 305* (Type, Field Museum).

I have found no other *Hippocratea* described as having subsessile leaves and few with leaves as large. Of course, when the fruit is known it may prove to be a *Salacia*, but in that genus, also, such large, shortly petioled leaves appear to be distinctive.

Cormonema spinosum (Vell.) Reiss. var. **peruvianum**, var. nov., a f. typica differt glandulis cupuliformibus, conspicuis; ramis inermibus vel spinis plerumque circa 2 cm. longis; foliis subcoriaceis. — Peru: Open river-cliff shrub-tree, La Merced, Dept. of Junín, August 10–24, 1923, *Macbride 5368* (Type, Field Museum); also 5264.

If it were not for the existence in Argentina of another variant of this Brazilian shrub, which has not been classified but which has the glands of the Peruvian plant rather than the shallow patuliform ones of the type, I should describe this as a distinct species. Dr. Johnston referred it, in the absence of Brazilian material for comparison, to *C. spinosum* but noted on the sheet that the genus had not been recorded before from the northern Amazonian region. My specimens are only in fruit. For the time they may, therefore, be recognized, on the characters given, as representing a geographic variety. The Argentine shrub is yet another variant with more the leaf texture and short spines of the typical form.

Cuphea carthagenensis (Jacq.), comb. nov. *Lythrum carthagenense* Jacq. Stirp. Am. Hist. 148. 1763. *C. balsamona* Cham. & Schlecht. Linnaea 2: 363. 1827; 5: 569. 1830.

As there is no reasonable doubt that the plant of Jacquin and that of Chamisso and Schlechtendahl are the same, Jacquin's name, being the earlier, is to be taken up. The description of the calyx as "pilose" applies to no other closely related species as well as to this one. Furthermore, *C. balsamona* has been observed as the common weedy *Cuphea* about Cartagena, Colombia, the original locality of Jacquin's plant.

Cuphea ciliata R. & P. Prodr. 66. 1794; Syst. 120. 1798. *C. microphylla* HBK. Nov. Gen. 6: 201. 1823. *C. loxensis* HBK. op. cit. 200.

Attention may be called to the fact that the above name of Ruiz and Pavón stands notwithstanding the existence of the earlier published *Lythrum ciliatum* Swartz, which has been transferred to *Cuphea* by Koehne, Bot. Jahrb. 1: 454. 1881, and which is a synonym of *C. decandra* Ait. Hort. Kew. ed. 2. 3: 3, 151. 1811. The valid earlier use of the name "*ciliata*" in the genus *Cuphea* precludes,

according to International Rules, the taking up of Swartz' name as Koehne has done.

Laguncularia racemosa Gaertn. f. **longifolia**, f. nov., foliis oblongo-ellipticis, plerumque 10–11 cm. longis, 4 cm. latis.—Peru: Coastal plain between Tumbes and Zarumilla, Dept. of Tumbes, January 30–31, 1927, *Weberbauer 7527* (Type, Field Museum).

In the large series of specimens of this well-known seaside shrub in the herbarium at Berlin-Dahlem none appear to have leaves varying from the usual elliptic-oval form. Typically the leaves are also uniformly shorter than those of *Weberbauer's* material. Curiously, a specimen from rather near-by Guayaquil is quite typical.

Niphogeton Schlecht. *Linnaea* 28: 481. 1856. *Apium* L. sect. *Oreosciadium* DC. Prodr. 4: 101. 1830. *Oreosciadium* (DC.) Wedd. *Chloris* And. 2: 203. 1857.

Although Wolff, *Pflanzenr.* IV. 228: 46. 1927, follows DeCandolle in regarding this group as only a section of *Apium*, I think it is more properly treated, as by Bentham and Hooker and by Weddell, as a distinct genus. In general it is quite different, both in habit and habitat, and it always has involucre bracts. It is true that one section of *Apium* as defined by Wolff (sect. *Helosciadium*) is provided with bracts, but the species constituting it are aquatic or lowland weeds with the aspect of *Apium*, an aspect so totally different from that of the high andean plants considered here that to associate the latter in the same genus is not only inconvenient but seems unreasonable. Besides, the section *Helosciadium* of *Apium* may be as closely related, from a genetic standpoint, to *Sium* (with which it has often been allied) as to *Apium* and might conveniently be kept distinct from both. At any rate, the species comprising *Niphogeton* constitute a group too aberrant for inclusion in *Apium*, regardless of the disposition made of *Helosciadium*.

The following are the Peruvian species:

Niphogeton dissecta (Benth.), comb. nov. *Petroselinum dissectum* Benth. Pl. Hartw. 188. 1845. *Oreosciadium dissectum* Wedd. *Chloris* And. 2: 204. 1857.

Niphogeton dissecta (Benth.) Macbr. var. **aspera** (Wedd.), comb. nov. *Oreosciadium dissectum* (Benth.) Wedd. var. *asperum* Wedd. *Chloris* And. 2: 204. 1857.

All the Peruvian material of this species appears to be referable to this variety, distinguishable from the typical form by the somewhat scabrous foliage. The type of *Oreosciadium scabrum* Wolff,

Bot. Jahrb. 40: 305. 1908 (*Apium scabrum* Wolff, Pflanzenr. IV. 228: 49. 1927), has not been studied but collections made by me from the same region—along the railroad to La Oroya—exhibit in varying degree the characters relied upon by Dr. Wolff to distinguish his species. One may reasonably conclude, therefore, that these apparent differences are the result of local conditions of environment. The correctness of this conclusion is borne out further by the fact that a specimen from Dr. Herrera, collected in the southern Andes, the type region of the variety *aspera*, closely approaches *O. scabrum* in character.

Niphogeton Weberbaueri (Wolff), comb. nov. *Apium Weberbaueri* Wolff, Rep. Spec. Nov. 17: 175. 1921.

This interesting and distinct species, named for the distinguished phytogeographer of Peru, is apparently known only from the type collection.

Niphogeton magna, sp. nov., glabra; caulibus 4–6 dm. altis; foliis glaucescentibus radicalibus 2–3 dm. longis, segmentis bi- vel tripinnatisectis ultimis linearibus, apiculatis; petiolis circa 1.5 dm. longis, longe vaginantibus; caulinis similibus vel subpinnatisectis, plus minusve abrupte vaginantibus; umbellis 7–23-radiatis; radiis inaequalibus 2.5–5 cm. longis; foliolis involucri paucis, ut videtur sublinearibus, integris vel pauci-pinnatis, circa 1 cm. longis; involu-cellis foliolis integris circa 4 mm. longis quam pedicelli fructiferi paullo longioribus; fructibus nitidis, ovoideis, ad 4 mm. longis; jugis crassis, valde prominentibus.—Peru: At base of limestone cliff, La Oroya, May 27–June 7, 1922, *Macbride & Featherstone 968* (Type, Field Museum).

This is by far the largest species known. It apparently is most closely related to **Niphogeton glaucescens** (HBK.), comb. nov. (*Apium glaucescens* HBK. Nov. Gen. 5: 18. 1821), but that has much smaller leaves, shorter rays, and smaller fruits.

Clavija euerganea, sp. nov., fruticosa, 5 m. alta, glaberrima; foliis rigidiuscule coriaceis obovato-oblongis vel fere oblongis, 13–17 cm. longis, 4–5.5 cm. latis, apice rotundatis vel etiam acutiusculis, utrinque densissime et minute prominulo-reticulatis, margine per-anguste flavido-marginata, grosse irregulariterque spinoso-serrata; petiolis crassis, 5–7 mm. longis; racemis ut videtur paucis, remotifloris, 7–15 cm. longis; pedicellis erectis vel nutantibus gracilibus per anthesin usque 4 mm. longis; bracteis ovato-acutis, minutissime ciliatis; floribus 5-meris, fere 15 mm. diam.; sepalis basi coalitis late orbicularibus, margine minute ciliata; petalis ultra $\frac{1}{2}$ connatis lobis semiorbicularibus, minute crenulatis, fere 5 mm. longis; staminodiis emergentisque annulum carnosum circa petalorum faucem forman-

tibus; tubus stamineus e petalorum fauce satis emergens tubo filamentorum quam antherae paullo longiore; ovarium floris masculini valde reductum.—Peru: In deciduous bushwood, mountains east of Hacienda Chicama, Dept. of Tumbes, February 19–24, *Weberbauer 7657* (Type, Field Museum).

If I interpret correctly, from description, the floral structure of *C. Lehmannii* Mez of Colombia, and of *C. Eggersiana* Mez of Ecuador, this species from Peru is most nearly related to those more northern plants, which are characterized by entire-margined leaves. The fleshy ring surrounding the corolla throat is irregular in form but apparently continuous by the union of the bodies alternating with the staminodia. The only other species with strongly spinescent leaves and with staminodia not entirely distinct are *C. pungens* (Willd.) Radlk., *C. Radlkoferi* Mez and *C. cauliflora* Regel. The first has densely spinescent leaves and the staminodia not fused, the second, acutish petals, and the third, short, densely flowered racemes.

According to Dr. Weberbauer the flowers of this beautiful species were brick-colored.

Geissanthus abditus, sp. nov., fruticosus, glabriusculus; ramulis crassiusculis apicem versus paullo angulatis; foliis obovato-ellipticis, basi aliquid attenuatis et in petiolum brevem (5 mm.) decurrentibus, apice obtusis vel rotundatis, margine integerrimis vel obscure undulatis, plerumque 12 cm. longis et 5–6 cm. latis, rigidiuscule chartaceis, glabris, supra opacis nervis vix notatis, subtus pallidioribus bene reticulatis, punctulis manifestioribus fere destitutis; paniculis pyramidalis, 1 dm. longis, 6 cm. latis; floribus brevissime pedicellatis; floribus 2.5 mm. longis subglabris 5-meris; calyce glabro, lobis ovatis perobscure punctatis; petalis lingulatis obscure vel haud punctulatis; stamina petalis permulto breviora e fauce vix emergentia antheris oblongo-ovatis acutiusculis; ovarium glabrum stylo e gracilioribus cylindrico, stigmate discoideo.—Peru: Open tree-shrub, Muña, Dept. of Huánuco, May 23–June 4, 1923, *Macbride 3978* (Type, Field Museum).

Closely simulating in foliage *G. Haenkeanus* Mez and *G. obtusus* Mez, both of which have been collected at or near Muña, this species might readily pass for either except for its extremely short stamens, which character allies it with *G. peruvianus* (A. DC.) Mez, according to Mez's treatment, *Pflanzenr.* IV. 236: 233–234. 1902. From the last it is readily distinguishable by its nearly complete lack of pubescence and by its entire obtuse leaves.

Rapanea dependens (R. & P.) Mez var. **saxatilis**, var. nov., petalis obtusis vel rotundatis, punctulis nullis vel perpaucis.—Peru: Very bushy 1 m. shrub of wet rocky montaña, Playapampa, Dept. of Huánuco, June 16–24, 1923, *Macbride 4865* (Type, Field Museum).

There seems to be only one noteworthy difference between this plant and the typical form of the species, but this—the lack of the black glands on the petals—is so striking that it merits taxonomic recognition. The habitat was unusual, the species commonly growing on well-drained slopes.

Symplocos scabra, sp. nov., arbor usque ad 7 m. alta ubique breviter ramosa; ramis junioribus dense adpressequ ferrugineo-strigoso-hispidis, demum glabratis sed scabro-punctulatis; foliis oblongo- vel ovato-ellipticis, basi cuneatis vel interdum subrotundatis, apice plus minusve angustatis obtusis, plerumque 8 cm. longis et 3.5–4 cm. latis, chartaceo-coriaceis, supra viridibus ut videtur glabris non vel vix nitidulis sed sub lente brevissime parceque scabriusculis, subtus pallidioribus sparse cum pilis subpatulis firmissculis, brevibus et longis intermixtis, praecipue ad nervos scabro-pubescentibus, ad basin fere pseudo-glanduloso-serrulatis; nervis nervulisque supra vix notatis paullo impressis, subtus reticulato-ramosis valde prominentibus; petiolis 5–8 mm. longis; floribus ignotis; racemis axillaribus et etiam extra-axillaribus, 1–3-floris, circa 2 cm. longis; pedicellis 2–5 mm. longis; fructu ellipsoideo glabro 11 mm. longo circa 6 mm. crasso.—Peru: Wet, rocky, more or less wooded uplands, Tambo de Vaca, June 10–24, 1923, *Macbride 4898* (Type, Field Museum).

With very few exceptions, every one of the three hundred or so species of *Symplocos* recognized are represented at Berlin-Dahlem by at least a leaf. I therefore venture to describe this Peruvian tree as new, even in the absence of flowers, because in its large leaves and harsh pubescence it is not matched in that collection. Without flowers its position in Brand's monograph, Pflanzenr. IV. 242. 1901, is uncertain, although it is probably a member of the subsection *Pseudoaletonia* Brand. *S. Lehmannii* Brand has similar harsh pubescence but the leaves are three times smaller. Among Peruvian species *S. scabra* seems nearest *S. tristis* Brand and *S. coriacea* A. DC., both with soft pubescence and subentire leaves. *S. Mezii* Szylszyl. I have not seen, but that shrub is described as having indistinctly serrate-crenate and coriaceous leaves.

Styrax ferax, sp. nov., arbor; ramis gracilibus subteretibus junioribus sordide tomentosis, demum glabratis; foliis repando-undulatis, oblongo-ellipticis, basi subabrupte cuneato-attenuatis interdum plus minusve obliquis, apice subabrupte acutis vel breviter acuminatis, plerumque 7–9 cm. longis et 3–5 cm. latis, chartaceo-coriaceis, supra viridibus glabris nitidulis, subtus breviter et molliter cum pilis stellatis, griseis et flavis intermixtis, tomentoso-pubescentibus; nervis lateralibus 5–6, supra paullo notatis, subtus medio-criter prominentibus; petiolis usque 8 mm. longis; racemis 4–6 cm.

longis plus minusve paniculatis terminalibus vel etiam axillaribus patentibus flavescenti-stellato-tomentosis; pedicellis vix 1 cm. longis; bracteis minutis caducissimis, superne medio pedicelli; floribus 10–12 mm. longis, externe sericeo-stellatis; calyce minute denticulato cupuliformi 4 mm. alto; corolla 5-partita, tubo glabro 1.5 mm. longo, lobis ad basin dense pilosis.—Peru: Chanchamayo Valley, Dept. of Junin, *Schunke* 431 (Type, Field Museum); also 289.

According to Miss Perkins' disposition of the species of *Styrax*, Pflanzenr. IV. 241. 1907, this plant is intermediate between *S. polyanthus* Perk. (of Costa Rica) and *S. Poissonianus* Perk. Its leaves, especially in their fewer nerves, are different from those of either of these species, and it is further distinguished from the former by the yellowish-pubescent inflorescence and from the latter by the much smaller flowers. If one ignores the character of branched and open inflorescence, one is led by Miss Perkins' key to *S. tarapotensis* Perk., which is at once separable by the much larger leaves.

Cordia lucayana (Millsp.), comb. nov. *Varronia lucayana* Millsp. Field Mus. Bot. 2: 311. 1909.

In the course of writing labels for a duplicate set of Percy Wilson's collection of plants made in the Bahamas in 1907, my attention was called to this interesting endemic species of *Cordia*. In Contr. Gray Herb. 49: 16. 1917 I expressed the opinion that the segregation of this genus served no useful purpose, and I am still of this belief.

5. AN ILLINOIS VARIETY OF SHOOTING STAR

Dodecatheon Meadia L. var. ***Frenchii*** Vasey; Wats. & Coulter in Gray Man. ed. 6. 735b. 1891. *D. Meadia* L. subsp. *membranaceum* R. Knuth, Pflanzenr. IV. 237: 237. 1905.

Specimens examined: Fern Rocks, near Makanda, Ogle Co., Ill., May, 1871, *G. H. French*. Union County, Ill., May 10, 1873, *G. H. French*. Southern Ill., *Prof. Seymour* (no other data).

Dodecatheon Meadia L. f. ***alba***, f. nov., petalis albis.—Illinois: Prairie swale, Rockford, Winnebago Co., June 19, 1927, flowers white, *Macbride* 7073 (Type, Field Museum). Beach, Lake Co., May 26, 1918, flowers pure white, *Mrs. F. E. Pope*.

Although there are no other collections in Field Museum accompanied by the notation "flowers white," this color form is of not infrequent occurrence, as indicated by Gray's Manual ed. 7. 647, "corolla rose-color or sometimes white," and by Britton & Brown Ill. Fl. ed. 2. 2: 717, "corolla purple, pink or white." On the prairies of Lake County, Indiana, the white form seems to be more plentiful than that with rose corollas.

In studying a collection of the well-known shooting star made by myself in 1927 in northwestern Illinois, I noticed the publication of *Dodecatheon Meadia* L. subsp. *membranaceum* R. Knuth, based upon two collections from "southern Ill." One is from Macanda, Jackson County, but the other is from Fountaindale, Ogle County, a town nearly in the northwestern corner of the state! The Jackson County postoffice is sometimes spelled "Makanda," and it is the type locality of the variety *Frenchii* Vasey, a name not included in the monograph of Primulaceae by Pax and Knuth (Pflanzenr. IV. 237). This omission is not surprising in view of the obscure publication of the variety in an addenda and on a page (735b) apparently not inserted in every issue of edition six of Gray's Manual, for the leaf is lacking in one of the two copies in the library of Field Museum.

In its extreme development the variety *Frenchii* is very striking because of its exceptionally thin, broadly elliptic leaves. The blades of some of those on the type are 5 cm. wide by only 6 cm. long. Other plants, however, have ovate-lanceolate leaves mostly about 3 cm. wide by 7 or 8 cm. long. Although they may at first nearly equal the flowering scape, this may at least twice exceed them when in fruit. Individual plants may or may not show the slight pubescence mentioned in the original description. Accordingly, this plant seems best treated as only a variety of *D. Meadia*, as first published. Britton and Brown, Ill. Fl. 2: 717. 1913 reduce it outright while maintaining *D. brachycarpa* Small, Fl. S. E. U. S. 906. 1903, a form or race of the Southern States treated by Knuth as a subspecies but very doubtfully meriting more than varietal recognition because its character—a short capsule scarcely exceeding the calyx lobes—often can be nearly matched in northern material.

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STUDIES OF AMERICAN PLANTS—IV

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STUDIES OF AMERICAN PLANTS—IV

PAUL C. STANDLEY

The numerous and extensive collections of tropical American plants received for study by Field Museum during 1929 and 1930 have continued to yield a high number of undescribed or otherwise interesting species. Some of these are discussed on the following pages.

The plants other than Rubiaceae that are treated here are chiefly Central American. Most of them are British Honduran, and were collected by C. L. Lundell and William A. Schipp. The plants obtained by these collectors include the usual number of novelties, and several genera new to Central America, such as *Rousselia*, *Suriana*, and *Thespesia*.

Several new species found by the writer in Honduras in 1927-28 are described, the most interesting being a member of the genus *Ludwigia*, a group not recorded previously from Central America. A few species are based upon collections made in Panama twenty years ago by H. Pittier, and submitted recently for determination to Field Museum by the United States National Museum. Several other new plants are from collections made lately in the state of Veracruz, Mexico, by that discriminating collector, Dr. C. A. Purpus. His recent explorations show that Veracruz is not completely known botanically, in spite of the vast amount of work already done there.

The present paper includes, also, a few new names and combinations necessary for observance of the generally accepted rules of nomenclature, or for saner or more conservative treatment of genera.

By far the greater number of the succeeding pages are filled with descriptions of new South American Rubiaceae, a group to which the writer has devoted much time during recent months. The material treated in this paper is from four principal sources. Through the courtesy of Dr. L. Diels and Dr. K. Krause, there have been received for study from the Berlin Botanic Garden more than 700 undetermined Rubiaceae, chiefly of the tribes *Coussareae* and *Psychotrieae*. These include a substantial number of new species from Brazil and Andine South America besides many extensions of range for those

already published. Several sendings of plants from the Jardin Principal Botanique of Leningrad have contained additions to the list of Rubiaceae known at present from Colombia. Most of these addenda were collected by Dr. G. Woronow and S. Juzepczuk in the little-known Caquetá region of southern Colombia, whose flora shows such affinities with that of Amazonian Peru as might naturally be expected.

The majority of the new Rubiaceae described are Peruvian. A large number of them are from the magnificent collection made in eastern Peru in 1929 for Field Museum by Llewelyn Williams. This collection, the first really large one assembled in that particular region, was made in localities not visited, apparently, by the classic collectors, such as Poeppig, Spruce, and Ule. It has proved unexpectedly rich in new species, besides providing material of others not represented hitherto in American herbaria. It includes numerous described species and some genera not reported before from Peru.

A second large Peruvian collection of Rubiaceae is that obtained in 1929 by E. P. Killip and A. C. Smith for the Smithsonian Institution. A nearly complete set of duplicates of the Rubiaceae has been deposited in Field Museum through the courtesy of the United States National Museum and the unicates have been lent for determination. Most of the specimens were gathered in localities other than those visited by Mr. Williams, consequently the species represented are largely different. The Killip and Smith series has yielded a very large number of additions to the flora of Peru.

Study of this huge amount of new material has been facilitated to an extraordinary extent by the series of type photographs obtained at Berlin in 1929–30 by J. Francis Macbride. This work, the most important from the standpoint of American systematic botany that has ever been undertaken, was planned by Dr. B. E. Dahlgren, Acting Curator of the Department of Botany in Field Museum. It is being carried out through a grant generously made for the purpose by the Rockefeller Foundation. Botanists long accustomed to poring over confused Latin descriptions and trying to guess whether the specimen in hand could possibly be the species described, can best understand the joy of having all at once before one's eyes photographs of a vast number of species previously lacking in American herbaria. By this means the task of determination is simplified almost incredibly, and the improvement in accuracy of determinations scarcely can be estimated.

Unless otherwise indicated, all the specimens cited on the succeeding pages are in the herbarium of Field Museum.

COMMELINACEAE

Campelia hirsuta, sp. nov.—Herba erecta valida c. 60 cm. alta simplex, caule sparse hirsuto vel glabro, internodiis brevibus saepe vaginis occultis; folia oblongo-oblancoolata 14–20 cm. longa, 4–5.5 cm. lata, abrupte longeque acuminata, basin versus longe angustata et distincte petiolata, utrinque dense hirsuta; vaginae subinflatae c. 1 cm. longae, ubique sed praesertim ad marginem densissime pilis longis patentibus fulvis hirsutae; pedunculi foliis plerumque longiores, saepe superne bifidi, dense fulvo-hirsuti, bractea una ad vaginam nudam reducta supra medium onusti; flores pauci, c. 3–4, capitati, bracteis 2 valde inaequalibus fulcrati; bractea major late ovali-ovata 4.5–6 cm. longa, 2–3.5 cm. lata, abrupte acuta, basi truncata vel subcordata, viridis, utrinque dense hirsuta, minore 1.5–3 cm. longa acuta triangulari complicata; sepala oblonga 4–5 mm. longa sparse hirsuto-ciliata, apice densius hirsuta; petala marcescentia alba.—Honduras: Lancetilla Valley near Tela, Dept. Atlántida, altitude about 300 m., January 7, 1928, *Paul C. Standley 54189* (Herb. Field Mus. No. 582,994, type). Also *Nos. 52994 and 53957*, from the same region.

By recent writers a single species of this genus, *Campelia Zanonina* (L.) HBK., has been recognized, but the present plant is so different from that that it scarcely can be considered as even an extreme form of it. *C. hirsuta* differs conspicuously in its copious pubescence of long stiff hairs, and in the very distinct form of the floral bracts.

Tradescantia gracillima, sp. nov.—Herba gracilis adscendens vel procumbens, ad nodos radicans, caulibus elongatis ramosis in uno latere minute denseque papilloso-pubescentibus, internodiis elongatis; vaginae 4 mm. longae subadpressae, minute praesertim ad marginem pubescentes; folia ovata vel elliptico-ovata 3–5 cm. longa, 1.5–2 cm. lata, acuta, tenuia, basi valde inaequalia et saepe in petiolum brevem contracta, supra sparse pilis longis debilibus pallidis paucicellularibus villosa, subtus pallidiora, glabra; umbellae terminales pauciflorae, pedicellis gracilibus 4 mm. longis glabris; bractee 2 (vulgo basi folio 1 fulcratae) late rotundato-cordatae, apice rotundatae, basi abrupte contractae, extus sparse villosae vel fere glabrae, virides; sepala late ovata obtusa 2.5–3 mm. longa ciliata; petala alba 4 mm. longa; ovarium glabrum.—Honduras: In wet thicket near Tela, Dept. Atlántida, at sea level, January 27, 1928, *Paul C. Standley 55158* (Herb. Field Mus. No. 583,293, type). Also *Nos. 54540 and 56609*, from the same locality.

The plant is clearly related to *T. commelinoides* R. & S., a Central American species, which has much longer and proportionately narrower leaves, purplish flowers, and comparatively narrower bracts. *T. gracillima* may be the plant described by Clarke (in DC. Monogr. Phan. 3: 296. 1881) as *T. commelinoides* var. *rotundifolia*.

***Commelina elegans* HBK. var. *hirsuta*, var. nov.**—Folia utrinque ut vaginae pilis albidis rigidulis patentibus undique dense hirsuta.—Honduras: In wet thicket, Quebrada Seca, Dept. Yoro, altitude 30 m., December, 1927, *Paul C. Standley 53891* (Herb. Field Mus. No. 583,868, type).

A well-marked form, with much more abundant pubescence than any of the other specimens of this species which are available for comparison.

URTICACEAE

***Rousselia humilis* (Sw.) Urban.**—On the North American continent this weedy plant has been known heretofore only from Yucatan. A recent collection makes possible its inclusion in the Central American flora: British Honduras: Honey Camp, October, 1929, *C. L. Lundell 552*.

ARISTOLOCHIACEAE

***Aristolochia Mexiae*, sp. nov.**—Frutex scandens, caulibus novellis gracilibus subgeniculatis plus minusve angulatis viridibus, minute tomentellis vel subglabratiss, internodiis brevibus vel elongatis; folia breviter petiolata alterna, petiolo crassiusculo 1–1.5 cm. longo dense pilosulo-tomentoso; lamina subcoriacea oblonga vel elliptico-oblonga, interdum ovato-oblonga, 17–21 cm. longa, 7–9 cm. lata, acuta vel subobtusata, basi profunde cordata, sinu petiolum aequante vel paullo longiore lobis late rotundatis clauso, supra viridis, pilis minutis adpressis sparse pilosula, ad venas densius pilosula, venis pallidis prominulis, subtus pallidior, ubique subdense pilosulo-tomentosa, ad venas dense pilis brevibus pallidis subadpressis pilosula, basi 7-nervia, costa crassiuscula elevata, nervis lateralibus utroque latere c. 7, angulo acuto adscendentibus, leviter curvis, gracilibus, elevatis, prope marginem conjunctis, nervulis arctissime reticulatis prominentibus; pedunculi axillares 1–2-flori 4–6 cm. longi, bracteis ovalibus vel ovali-ovatis apice obtusis vel rotundatis 2–4 cm. longis basi breviter cordatis; calyx extus sparse adpresso-pilosulus vel glabratus, stramineus, intus nigro-purpureus, utriculo subgloboso c. 6 mm. longo, fauce ampliata, limbo 3.5–4.5 cm. longo profunde in lobos 3 lineari-attenuatos fisso; capsula anguste oblonga sparse tomentosa acuta basi attenuata, c. 6.5 cm. longa et 1.3 cm. crassa.—Mexico: San Sebastián, Jalisco, alt. 1,500 m., on southern slope of open pine forest, February 13, 1927, *Ynes Mexia 2772* (Herb. Field Mus. No. 605,722, type).

The foliage of this plant is very similar to that of *A. asclepiadifolia* Brandeg., of Mexico, but the calyces of the two species are quite different. The plant is more closely related to the Mexican *A. malacophylla* Standl.

***Aristolochia maxima* L. var. *cordata*, var. nov.**—Folia anguste oblonga, 7.5–13 cm. longa, 2–3.5 cm. lata, acuta vel abrupte acuta, basi profunde cordata, sinu angusto 10–14 mm. longo, lobis basalibus

paullo incurvis late rotundatis, utrinque ad venas puberula, aliter fere glabra; capsula c. 6.5 cm. longa, 4.5 cm. longe stipitata.—Panama: Shores of Gatún Lake south of the laboratory, Barro Colorado Island, August 28, 1929, W. N. Bangham 455 (Herb. Arnold Arb., type).

The leaves of *A. maxima* are normally obtuse or rounded at the base, or very shallowly cordate, and in none of the numerous specimens available do the leaves approach closely in form those of this Panama plant. It is not improbable that flowers, when collected, may show that this Barro Colorado *Aristolochia* represents a distinct species.

OLACACEAE

Heisteria fatoensis, sp. nov.—Frutex vel arbor omnino glabra, ramulis gracilibus, vetustioribus interdum brunnescentibus, novellis olivaceis subangulatis, internodiis brevibus vel elongatis; folia petiolata, petiolo gracili 7–9 mm. longo supra breviter canaliculato; lamina crasse membranacea oblongo-ovata vel interdum elliptico-oblonga, 7.5–9.5 cm. longa, 3–4.5 cm. lata, subabrupte et longiuscule acuminata, acumine angusto attenuato summo apice anguste rotundato et mucronato, basi plerumque late rotundata, fere concolor, nervulis supra prominulis et laxe reticulatis, costa subtus elevata gracili, nervis lateralibus utroque latere c. 6, tenuibus, fere rectis, prope marginem arcuato-conjunctis, nervulis prominulis reticulatis; flores in axillis fasciculati, pedicellis gracilibus 3–7 mm. longis petiolo brevioribus; calyx c. 0.5 mm. longus, breviter 5-lobus, lobis triangularibus acuminatis sub flore patentibus; petala 5 fere 2 mm. longa oblongo-ovata acuta, intus prope medium villosa; stamina 10; pedicelli fructiferi c. 7 mm. longi; calyx fructifer paullo accrescens, reflexus, ut videtur viridis, 4 mm. longus, subinteger vel brevissime undulato-lobatus; fructus globosus 6–10 mm. diam. ruber, apice late rotundatus.—Panama: Loma de la Gloria near Fató (Nombre de Dios), Prov. Colón, alt. 100 m. or less, July–August, 1911, H. Pittier 4244 (Herb. Field Mus. No. 599,422, type).

The collector states that the plant is a woody vine, but it is more probable that it is an erect shrub, like other members of the genus. The species is well marked by the very small fruiting calyx and by the globose fruit.

Heisteria concinna, sp. nov.—Arbor 6–9-metralis omnino glabra, ramulis gracilibus subteretibus olivaceis, novellis subteretibus vel obscure angulatis, internodiis brevibus vel elongatis; folia petiolata, petiolo gracili vel crassiusculo 7–18 mm. longo; lamina coriacea vel subcoriacea elliptico-oblonga, 5.5–12 cm. longa, 2.5–5.5 cm. lata, abrupte breviterque acuminata, acumine anguste triangulari attenuato acuto vel subobtusio, basi obtusa vel acuta, fere concolor, costa supra plana vel subimpressa subtus elevata, nervis nervulisque supra prominulis et arcte reticulatis, nervis lateralibus utroque latere c. 6,

subtus prominulis, angulo acuto adscendentibus, fere rectis, prope marginem arcuato-conjunctis, nervulis prominulis arcte reticulatis; flores numerosi in axillis dense fasciculati, pedicellis gracilibus 5–7 mm. longis petiolo duplo brevioribus teretibus; calyx in anthesi 1 mm. longus ad medium 5-lobus, lobis triangulari-ovatis acuminatis erectis; petala 5 acuta, 2 mm. longa, intus prope medium breviter villosa; stamina 10, antheris minutis globosis; calyx fructifer 1.5–2 cm. latus, lobis patentibus rotundato-ovatis apice rotundatis; drupae non visae.—Panama: Vicinity of San Felix, eastern Chiriquí, alt. 120 m. or less, January, 1912, *H. Pittier 5197* (Herb. Field Mus. No. 600,217, type).—Costa Rica: Vicinity of Tilarán, Prov. Guanacaste, 500–650 m., *Standley & Valerio 45669*. Aguilares, Prov. Guanacaste, 600 m., *Standley & Valerio 46353*.

Called “naranjillo” in Costa Rica. Growing there in dry forest; a tree with smooth bark and dense rounded crown; fruits white; fruiting calyx dark red.

By its coriaceous leaves and white fruits this is easily recognized among the few Central American members of the genus.

POLYGONACEAE

Coccoloba cardiophylla Standl. Field Mus. Bot. 8: 8. 1930.

This well-marked species was described from Yucatan. Recently it has been discovered to be a member also of the Central American flora, having been collected in near-by British Honduras: Honey Camp, September, 1929, *C. L. Lundell 514*.

Coccoloba Lundellii, sp. nov.—Arbor, ramulis crassiusculis teretibus brunnescentibus glabris, internodiis brevibus vel elongatis; folia breviter petiolata, petiolo 1–2 cm. longo crasso supra sulcato minutissime puberulo; ocreae brunneae 5–7 mm. longae et ultra subpersistentes glabrae; lamina coriacea orbicularis vel interdum ovalis, 8–14.5 cm. longa et saepe aequilata, apice latissime rotundata, basi late rotundata et saepe emarginata vel subcordata, supra glabra, costa venisque prominulis, subtus concolor ad nervos et interdum in tota pagina minutissime puberula, glabrescens, costa crassa elevata, nervis lateralibus utroque latere c. 7 gracilibus elevatis, fere rectis vel leviter arcuatis, prope marginem planum vel subrevolutum arcuato-conjunctis, nervulis inconspicuis; racemi terminales et axillares, laxi multiflori, solitarii, c. 2 cm. longe pedunculati, 22–27 cm. longi et ultra, rhachi gracili flexuosa dense et minutissime puberula, ocreolis minutis persistentibus vix 1 mm. longis; pedicelli breves rigidi glabri 2–2.5 mm. longi; fructus late ovoideus c. 1 cm. longus et 7–8 mm. latus obtusus, basi abrupte breviterque constrictus, glaber, tubo accrescente perianthii inclusus.—British Honduras: Honey Camp, October 24, 1929, *C. L. Lundell 649* (Herb. Field Mus. No. 605,614, type).

Evidently a relative of the widespread *C. Schiedeana* Lindau, but differing conspicuously in its very broad leaves, somewhat suggestive of those of the common seagrape, *C. Unifera*.

RAFFLESIACEAE

This family has been discovered in Central America only recently, *Apodanthes Flacourtiae* Karst. having been found in 1927 on Barro Colorado Island, Canal Zone (see Field Mus. Bot. 4: 149. 1929). A second representative of the family may now be recorded for Central America:

Pilostyles mexicana (Brandeg.) Rose. *Apodanthes mexicana* Brandeg.

Honduras: Near Siguatepeque, Dept. Comayagua, alt. 1,100 m., February, 1928, *Paul C. Standley 56221*, growing on *Calliandra lucens* (Britton) Standl. The *Pilostyles* was abundant on this host, and was easy to recognize, even at some slight distance, after it once had been found, because of the tuberculate appearance given to the branches of the *Calliandra* by the dense clusters of flowers.

SAXIFRAGACEAE

Ribes Menziesii Pursh var. ***subvestitum*** (Hook. & Arn.), comb. nov. *R. subvestitum* Hook. & Arn. Bot. Beechey Voy. 346. 1838. *Grossularia Menziesii* var. *subvestita* Berger, N. Y. Agr. Expt. Sta. Tech. Bull. 109: 77. 1924.

Ribes leptosmum (Cov.), comb. nov. *Grossularia leptosma* Cov. N. Amer. Fl. 22: 214. 1908.

Ribes senile (Cov.), comb. nov. *Grossularia senilis* Cov. N. Amer. Fl. 22: 214. 1908.

Ribes tularense (Cov.), comb. nov. *Grossularia tularensis* Cov. N. Amer. Fl. 22: 218. 1908.

Ribes Van-Fleetianum (Berger), comb. nov. *Grossularia Van-Fleetiana* Berger, N. Y. Agr. Expt. Sta. Tech. Bull. 109: 93. 1924.

Ribes texense (Cov. & Berger), comb. nov. *Grossularia texensis* Cov. & Berger, N. Y. Agr. Expt. Sta. Tech. Bull. 109: 95. 1924.

Ribes klamathense (Cov.), comb. nov. *Grossularia klamathensis* Cov. N. Amer. Fl. 22: 225. 1908.

Ribes Downingianum (Berger), comb. nov. *Grossularia Downingiana* Berger, N. Y. Agr. Expt. Sta. Tech. Bull. 109: 103. 1924.

Ribes neglectum (Berger), comb. nov. *Grossularia neglecta* Berger, N. Y. Agr. Expt. Sta. Tech. Bull. 109: 106. 1924.

Ribes non-scriptum (Berger), comb. nov. *Grossularia non-scripta* Berger, N. Y. Agr. Expt. Sta. Tech. Bull. 109: 107. 1924.

ROSACEAE

Amelanchier denticulata (HBK.) Koch.—So far as I know, this genus has not been known heretofore from Central America, but it may now be recorded from Guatemala: San Juan Sacatepequez, alt. 1,480 m., in 1929, *Jesús Morales Ruano 1375*. The vernacular name is given as "cerezo rojo."

RUTACEAE

Zanthoxylum mayanum, sp. nov.—Arbor, ramulis crassis pallidis lenticellis parvis dense conspersis glabris; folia pinnata, foliolis c. 14 alternis, petiolo tereti 5–6 cm. longo glabro, rhachi gracili 19–23 cm. longa subtereti, sparse et minutissime puberula vel glabrata; foliola 2–4 mm. longe petiolulata, subcoriacea, oblonga vel anguste oblonga, infima c. 5.5 cm. longa et 3 cm. lata, superiora 9.5–16 cm. longa, 3–5.5 cm. lata, abrupte breviterque acuminata, acumine anguste triangulari apice rotundato, basi valde inaequali acuta, latere exteriore 2–3 mm. infra interiorem protracta, integra, dense et grosse glanduloso-punctata, supra glabra, lucida, costa subimpressa, nervulis prominulis, subtus fere concolor, sublucida, ad costam prominentem minute adpresso-pilosula, aliter glabra vel glabrata, nervis lateralibus numerosis angulo lato divergentibus, nervulis laxe reticulatis prominulis; inflorescentia ut videtur axillaris, late paniculata, panicula 18–26 cm. longa et fere aequilata, pyramidali, c. 6 cm. longe pedunculata, ramis adscendentibus dense minuteque albido-hirtellis, floribus secus ramulos fasciculatis c. 1.5 mm. longe pedicellatis; flos masculus: calyx 1 mm. latus 5-lobus patens, lobis rotundato-ovatis apice obtusis vel rotundatis extus dense puberulis; petala 5 oblonga obtusa fere 2 mm. longa glabra; stamina 5 petalis longiora, filamentis crasse filiformibus 3–3.5 mm. longis glabris, antheris latis fere 1 mm. longis.—British Honduras: Honey Camp, November 7, 1929, *C. L. Lundell 672* (Herb. Field Mus. No. 605,617, type).

Apparently an ally of *P. Kellermanii* P. Wilson.

SIMARUBACEAE

Suriana maritima L.—This shrub, common in some portions of the West Indian region, has not been reported, so far as I know, from Central America. The following collection is at hand: British Honduras: Stann Creek, in open places along the beach, a shrub 1.5 m. high, December, 1929, *W. A. Schipp 508*.

MALPIGHIACEAE

Stigmaphyllon ciliatum (Lam.) Juss.—Although known from the West Indies, this species has not been reported to occur on the North American mainland. Specimens are now at hand, as follows: British Honduras: Stann Creek, in mangrove swamp, a woody vine 4.5 m. long, with a stem 2.5 cm. in diameter, the flowers yellow, December, 1929, *W. A. Schipp* 559.

SAPINDACEAE

Thouinidium decandrum (H. & B.) Radlk.—In the *Trees and Shrubs of Mexico* (Contr. U. S. Nat. Herb. 23: 708. 1923) this species is reported only from western Mexico. Two recent collections extend its range substantially within that country: Rancho Remudadero, Veracruz, April, 1929, *C. A. Purpus* 13042, 14078.

MALVACEAE

Thespesia populnea (L.) Soland.—This species is one of those plants frequent in many parts of the West Indies which always may be expected to occur in Mexico and Central America, but there is no available record of its occurrence there. The following collection is probably the first report for Central America: British Honduras: Stann Creek, at edge of mangrove swamp, a shrub 3 m. high, with a trunk 10 cm. in diameter, the capsules yellow, December, 1929, *W. A. Schipp* 505.

VIOLACEAE

Hybanthus Purpusii, sp. nov.—Herba vel frutex ramosus 30–40 cm. altus et ultra, ramis gracilibus teretibus, novellis dense incurvo-puberulis; stipulae lineari-filiformes 1–2 mm. longae, erectae, persistentes vel deciduae; folia petiolata alterna, petiolo gracillimo 5–16 mm. longo incurvo-puberulo; lamina membranacea, lanceolato-oblonga vel oblongo-ovata, 3–8 cm. longa, 1.5–3.5 cm. lata, longiuscule acuminata, basi rotundata vel saepius breviter cordata, crenata vel crenato-serrata, supra viridis, glabra, subtus paullo pallidior, tantum ad nervos minute scaberula vel fere omnino glabra, costa gracili prominente, nervis lateralibus utroque latere c. 4, angulo acuto adscendentibus, prope marginem conjunctis; flores axillares solitarii, pedicellis gracillimis fere filiformibus 1.5–2.5 cm. longis dense incurvo-puberulis; sepala lanceolata paullo inaequalia 4–5 mm. longa viridia glabra ciliata attenuata 3-nervia persistentia; petalum inferius longe unguiculatum c. 9 mm. longum, lamina oblongo-ovata obtusa extus minute puberula intus glabra, sepalis plus quam duplo longius; petala minora sepalis breviora; capsula 5–6 mm. longa glabra

acuta.—Mexico: Banks of creek, Zacuapam, Veracruz, August, 1929, *C. A. Purpus 13012* (Herb. Field Mus. No. 603,371, type). Barrancas near Rancho Viejo, Veracruz, October, 1929, *Purpus 14087*.

This plant appears to be most nearly related to *H. longipes* (Dowell) Standl. and *H. glaber* (Dowell) Standl., both of which are Mexican, but they are conspicuously different in the form of their leaves, which are acute or long-attenuate at the base.

Hybanthus pumilio, sp. nov.—Herba ut videtur perennis, e basi ramosa, caulibus 8–13 cm. longis subteretibus dense breviterque pilosis, internodiis elongatis; stipulae inferiores lineares et 2–3 mm. longae virides ciliatae persistentes, superiores subulatae et 1–2 mm. tantum longae; folia breviter petiolata opposita, petiolo crassiusculo c. 2 mm. longo puberulo; lamina membranacea late ovata vel ovato-elliptica, 1.5–3 cm. longa, 1–2 cm. lata, acuta vel obtusa, basi acuta, crenato-serrata, utrinque praesertim ad nervos hispidula, fere concolor, costa subtus prominente crassiuscula, nervis lateralibus utroque latere 3–4 angulo acuto adscendentibus; flores axillares solitarii, pedicellis validis 1–4 mm. longis (in statu fructifero usque ad 10 mm.) hispidulis vel glabratis; sepala lanceolata longe attenuato-acuminata 3-nervia glabra ciliata persistentia; petala omnia sepalis breviora, minora oblonga obtusa c. 2 mm. longa glabra; capsula c. 9 mm. longa abrupte rostrata glabra, rostro crasso obtuso.—Mexico: Esperanza, Puebla, September, 1911, *C. A. Purpus 5604* (Herb. Field Mus. No. 299,206, type).

Clearly a relative of *H. humilis* (Rose & Dowell) Standl., of the Valley of Mexico. In that there is a large lower petal, the sepals are longer, the flowers are on slender pedicels 6–8 mm. long, and the leaves are described as glabrous.

BEGONIACEAE

Begonia Popenoei, sp. nov.—Herba acaulis, rhizomate horizontali subgracili c. 1 cm. crasso; stipulae 2–2.5 cm. longae lanceolato-oblongae longe attenuatae tenues brunnescentes extus sparse hispidae; folia e rhizomate longe petiolata, petiolo gracillimo usque ad 25 cm. longo dense pilis longis patentibus hispido-piloso; lamina membranacea late et oblique ovata, 10–23 cm. longa, 6.5–17 cm. lata, apice longe acuminata, basi valde obliqua profunde cordata, sinu angusto vel interdum in foliis minoribus lato, lobis basalibus late rotundatis, remote et minute repando-dentata vel fere integra, basi c. 7-nervia, supra viridis, sparse hispida, subtus paullo pallidior, ubique subdense pilis brunnescentibus vel ferrugineis hispido-pilosa; scapus petiolos aequans vel interdum brevior, sparse pilosus vel glabratus, gracilis, erectus; cymae masculae dense pauciflorae c. 4 cm. longae et aequilatae, ramis sparse breviterque pilosis; sepala 6–7 mm. longa rotundata alba, basi et apice rotundata, glabra;

cymae fructiferae usque ad 12 cm. latae glabratae, pedicellis gracilimis 1-2 cm. longis recurvis; capsula 8-9 mm. longa glabra, angulo uno in alam tenuem fere horizontalem 10-14 mm. longam apice rotundatam extenso, aliis 3-4 mm. late alatis.—Honduras: In wet forest on the hills above Lancetilla, near Tela, Dept. Atlántida, altitude about 100 m., December 13, 1927, *Paul C. Standley 52933* (Herb. Field Mus. No. 582,868, type). Lancetilla Valley, *Standley 52641*.

The species is named for Wilson Popenoe, director of the Lancetilla Experiment Station. This *Begonia* is a handsome one, and well worthy of cultivation. It somewhat resembles *B. nicaraguensis* Standl., but the latter differs at first glance in its coarsely toothed leaves, which have an altogether different pubescence.

MYRTACEAE

Calyptranthes Pittieri, sp. nov.—Frutex vel arbor, ramulis subteretibus vel obtuse quadrangulatis cinnamomeis rimosis, novellis minutissime ferrugineo-puberulis, internodiis brevibus vel elongatis; folia breviter petiolata opposita, petiolo crasso 3-5 mm. longo sparse strigilloso vel glabrato; lamina crasse coriacea, oblongo-elliptica vel late elliptica, 3.5-7.5 cm. longa, 1.5-3.5 cm. lata, acuminata, acumine anguste triangulari attenuato obtuso, basi obtusa vel acuta, interdum subrotundata, utrinque glabra vel glabrata, supra obscure viridis, impunctata, costa subimpressa, nervis obsoletis, subtus brunnescens, ubique in statu juvenili minute sparseque nigrescenti-puncticulata, costa crassiuscula elevata, venis nervulisque obscuris, margine plano; inflorescentiae axillares solitariae vel geminatae, cymoso-paniculatae, 3-5.5 cm. longae, 4-7.5 cm. latae, crasse 3-5 cm. longe pedunculatae, multiflorae, e basi trichotomae, ramis crassissimis compressis ferrugineo-sericeis vel serius glabratis, floribus ad apices ramulorum dense congestis sessilibus dense ferrugineo-sericeis, in alabastro 3.5 mm. longis obovoideis apice obtusis; calycis tubus 2-2.5 mm. longus obconicus; stamina numerosa longe exserta.—Costa Rica: Volcán de Poás, alt. 2,600 m., March 31, 1907, *H. Pittier 2034* (Herb. Field Mus. No. 599,947, type).

From the other Costa Rican species of *Calyptranthes* this is well distinguished by the thick leaves and by the very thick, strongly compressed branches of the ample inflorescence.

Eugenia Storkii, sp. nov.—Arbor parva fere omnino glabra, ramulis crassis cinnamomeis vel interdum albidis, glabris vel rarius sparse pilosulis, internodiis brevibus; folia petiolata opposita, petiolo crasso 4-7 mm. longo supra sulcato glabro vel rare pilosulo; lamina rigide coriacea, elliptica, obovato-elliptica vel rotundato-obovata, 2.5-5 cm. longa, 1.3-3.5 cm. lata, apice obtusa vel rotundata, interdum late rotundata et emarginata, basi acuta vel obtusiuscula, utrinque glabra, supra viridis, saepe lucida, sparse punctata, costa

nervisque subimpressis vel planis, costa crassa elevata, venis obsoletis vel vix prominulis, epunctata vel sparse minuteque puncticulata, margine plerumque revoluta; inflorescentiae axillares 1.5–3 cm. longe pedunculatae, triflorae, flore centrali sessili, aliis 3–8 mm. longe pedicellatis, pedicellis crassiusculis patentibus glabris vel pilosulis, bracteis linearibus 2–3 mm. longis; calycis tubus obovoideus c. 3 mm. longus glaber puncticulatus, sepalis 4 late rotundatis fere 3 mm. longis extus glabris ciliolatis; petala alba sepalis multo longiora glabra; stamina numerosa exserta.—Costa Rica: In potrero below Poás, alt. 1,800 m., June 6, 1928, *H. E. Stork 2501* (Herb. Field Mus. No. 598,526, type). East of Irazú, a tree in potrero, alt. 2,850 m., May, 1928, *Stork 2074*. Cerro Jucosal, a small tree with very dense, dark green foliage, the bark and branches like those of guava, *Stork 1228*. Fraijanes, Prov. Alajuela, 1,500–1,700 m., February, 1926, *Standley & Torres 47426*. Las Cóncevas, August, 1919, *C. H. Lankester K.99*.

A relative of *E. fragrans* (Sw.) Willd.

Eugenia chepensis, sp. nov.—Frutex, ramulis subteretibus gracilibus brunnescentibus vel ochraceis, novellis dense minuteque puberulis vel pilosulis, internodiis plerumque c. 1 cm. longis; folia breviter petiolata opposita, petiolo gracili 1–2 mm. longo puberulo; lamina subcoriacea lanceolato-oblonga, 1.5–4 cm. longa, 7–10 mm. lata, longe acuminata, acumine angusto attenuato apice anguste rotundato, basi acuta vel acuminata, supra fusca, glabra vel ad costam puberula, nervis obsoletis, ubique minute puncticulata, subtus multo pallidior, glabra, costa gracillima elevata, sparse minuteque puncticulata, nervis lateralibus utroque latere c. 9 angulo acuto divergentibus gracillimis prominulis, margine plano; inflorescentiae breviter racemosae, axillares vel plerumque e parte defoliata ramuli nascentes, 1–2 mm. longe pedunculatae, 3–7-florae, bracteis 0.6 mm. longis late ovatis acutis et apiculatis persistentibus, pedicellis gracilibus 2–3.5 mm. longis dense minuteque puberulis rectis; calyx c. 2.5 mm. latus, sepalis 4 late rotundatis extus sparse minuteque puberulis vel glabratis ciliolatis puncticulatis patentibus; stylus gracilis glaber 3 mm. longus.—Panama: Along the Río Chararé near Chepo, Province of Panama, alt. 50–200 m., October 29–30, 1911, *H. Pittier 4716* (Herb. Field Mus. No. 600,199, type).

The plant is noteworthy for the very small, narrow leaves, and for the numerous short racemes of small, comparatively long-pediceled flowers.

Eugenia guanacastensis, sp. nov.—Frutex vel arbor 3–7.5 m. alta, ramis teretibus rimosis, novellis gracilibus glabris interdum subcompressis, internodiis elongatis; folia brevissime petiolata opposita, petiolo crasso 2–4 mm. longo glabro; lamina coriaceo-membranacea, oblonga vel elliptico-oblonga, 6–12 cm. longa, 3–5 cm. lata, acuta vel breviter acuminata, apice ipso obtuso, basin versus paulo angustata, basi ipsa late rotundata vel subcordata, utrinque

glabra vel tantum ad costam puberula, supra viridis, costa subimpressa, venis venulisque prominulis, subtus fere concolor, costa crassiuscula elevata, nervis lateralibus utroque latere c. 7, angulo acuto adscendentibus, subarcuatis, prope marginem arcuato-conjunctis, nervulis prominulis laxe reticulatis; flores numerosi ad nodos ramorum defoliatorum fasciculati, pedicellis gracilibus 17-21 mm. longis subrigidis rectis glabris; calycis tubus obovoideus glaber 2 mm. longus, sepalis 4 ovalibus 4 mm. longis puncticulatis tenuibus roseis vel purpurascens glabris; stylus gracilis glaber 7-8 mm. longus.—Costa Rica: In wet forest, a slender tree with narrow crown, Los Ayotes, near Tilarán, Province of Guanacaste, alt. 600-700 m., January 21, 1926, *Paul C. Standley & Juvenal Valerio 45410* (Herb. Field Mus. No. 599,601, type). Naranjos Agrios, Guanacaste, in moist forest, 600-700 m., *Standley & Valerio 46378*. Tilarán, Guanacaste, in moist forest, 500-650 m., *Standley & Valerio 44240*. Quebrada Grande, southeast of Tilarán, 650 m., *Standley & Valerio 46125*.

The shrub or tree is a very handsome one, its blossoms suggesting those of apple trees in color and general effect.

Eugenia Pittieri, sp. nov.—Frutex, ramulis gracillimis teretibus cinnamomeis vel ochraceis rimosis, novellis dense minuteque puberulis, internodiis plerumque 1-1.5 cm. longis; folia brevissime petiolata opposita, petiolo crassiusculo 1-2 mm. longo minute puberulo; lamina tenuiter coriacea, oblanceolato-oblonga vel anguste elliptico-oblonga, 4-5 cm. longa, 1-1.5 cm. lata, abrupte breviterque acuminata, acumine angusto apice anguste rotundato, basi acuta vel acuminata, supra fusco-viridis, ad costam prominentem minutissime puberula, aliter glabra, nervis obsoletis, subtus multo pallidior, brunnescens, glabra, undique densissime puncticulata, costa gracillima vix prominula, venis obscuris, margine plano; flores in axillis paucifasciculati, sessiles vel brevissime crasseque pedicellati; calyx 1.5 mm. latus, lobis brevissimis late rotundatis obscure ciliolatis, extus fere glabris, puncticulatis; petala rotundata puncticulata c. 2 mm. longa glabra.—Panama: Forests of the upper Mamoni River, Province of Panama, alt. 150-400 m., October, 1911, *H. Pittier 4484* (Herb. Field Mus. No. 599,478, type). Canal Zone, in 1910, *Mrs. A. P. Epplesheimer*.—Costa Rica: Naranjos Agrios, Prov. Guanacaste, 600-700 m., *Standley & Valerio 46514, 46466*. Tilarán, Guanacaste, 500-650 m., *Standley & Valerio 45016, 45677, 44510*.

In size and form of leaves this is much like *E. chepensis*, but it differs from that species in the sessile fascicled flowers. The Costa Rican specimens are in fruit, but they are probably conspecific with the flowering specimens from Panama.

MELASTOMACEAE

Ossaea trichocalyx Pittier, Journ. Washington Acad. Sci. 13: 391. 1923.

Although known previously only from Panama, having been described from the Canal Zone, recent collections show that this species has a wide range. The following specimens agree well with type material: Honduras: Lancetilla Valley near Tela, Dept. Atlántida, near sea level, *Standley 52713, 54144*; a slender shrub 1-2 m. high, often reclining; fruit red or violet, borne on naked branches below the leaves.—British Honduras: Middlesex, in jungle, alt. 60 m., July, 1929, *W. A. Schipp 240*; a shrub 2 m. high, the flowers white, the ripe berries bright blue.

Clidemia involucrata DC.—Another addition to the flora of Central America is this well-marked species, known hitherto from the Guianas and Trinidad. Its extension to British Honduras, without known occurrence in intervening Central America, is paralleled in the case of numerous other species. British Honduras: Near Middlesex, in mountain forest, alt. 480 m., a treelike shrub 3 m. high, with small white flowers, the branches covered with reddish purple hairs, the fruits black, November, 1929, *W. A. Schipp 474*.

Conostegia pentaneura, sp. nov.—Frutex 2-metralis, ramulis crassiusculis obtuse tetragonis, novellis sparse minuteque ferrugineo-puberulis cito glabratiss, internodiis elongatis; folia longiuscule petiolata opposita, petiolo gracili 2-6 cm. longo subtereti minute ferrugineo-puberulo vel fere glabro; lamina elliptica vel oblongo-elliptica, 16-26 cm. longa, 9.5-12.5 cm. lata, membranaceo-coriacea, subabrupte breviterque acuminata, basi acuta, supra viridis, lucida, glabra, nervis non elevatis, subtus fere concolor, in sicco plus minusve brunescens, sublucida, ad venas minute furfuraceo-puberula, aliter glabra, basi 5-nervia, nervis gracilibus elevatis, nervulis transversis angulo fere recto divergentibus crebris parallelis, margine remote undulato-repando-dentato; flores paniculati, panicula 4.5 cm. longe pedunculata, laxa multiflora, c. 13 cm. longa et 8 cm. lata, ramis crassiusculis adscendentibus vel suberectis sparse et minutissime furfuraceo-puberulis vel fere glabris, pedicellis crassis glabratiss 2-3.5 mm. longis; calyx in alabastro 6-7 mm. longus ellipsoideus apice acutus vel acutiusculus glaber, floribus pentameris; petala ochroleuca; antherae c. 2 mm. longae.—Honduras: In forest, Lancetilla, near Tela, Dept. Atlántida, alt. 100 m., August 8, 1929, *F. M. Salvoza 825* (Herb. Arnold Arb., type).

This plant is clearly related to *C. superba* Don, in which the leaves are quintuplinerved and rounded at the base.

ONAGRACEAE

Ludwigia hondurensis, sp. nov.—Herba erecta stricta sparse ramosa c. 1 m. alta, caulibus gracilibus subteretibus et substriatis minute et subdense puberulis, internodiis foliis brevioribus; folia

alterna sessilia vel subsessilia, crassa et subrigida, linearia vel oblongo-linearia, 2-7 cm. longa, 3-5 mm. lata, basi et apice obtusa, integra, utrinque praesertim ad costam sparse et minutissime puberula vel fere glabra, costa utrinque prominente, venis obsoletis; flores pauci in axillis superioribus solitarii, pedicellis 5-11 mm. longis puberulis et sparse breviterque pilosulis; hypanthium clavatum 6 mm. longum pilosulum; sepala 4 lanceolata c. 11 mm. longa et 4 mm. lata longe acuminata, sparse minuteque pilosula vel glabrata; petala late obovata glabra sepalis breviora; discus epigynus subglobosus 2.5 mm. altus densissime albido-hispidulus, stylo crasso vix 2 mm. longo glabro, stigmate capitato 1.5 mm. lato.---Honduras: Along a stream in pine forest near Siguatopeque, Dept. Comayagua, altitude about 1,100 m., February, 1928, *Paul C. Standley 56464* (Herb. Field Mus. No. 581,008, type).

It was quite unexpected to find in Honduras a member of this North American genus, which is almost confined to the United States. No true species of the group, apparently, is known from either Central America or Mexico. *L. hondurensis* is clearly a relative of *L. virgata* Michx., of the southeastern United States, the latter differing conspicuously in its relatively broader leaves, large petals, broader sepals, and very small epigynous disk.

UMBELLIFERAE

***Eryngium caricinum*, sp. nov.**—Herba perennis e rhizomate brevi crasso erecta, omnino glabra, c. 1 m. alta, caule gracili tereti striato fere 5 mm. crasso simplici vel pauciramoso; folia plerumque basalia pauca linearia c. 50 cm. longa, parallela paucinervia, integra, utrinque longissime sensimque attenuata, prope medium 7 mm. lata; umbella terminalis c. 14 cm. longa et aequilata, e basi 6-radiata, phyllis lineari-lanceolatis attenuatis c. 12 mm. longis fulcrata, radiis 6.5-10 cm. longis gracilibus adscendentibus 1-3-dichotomis, bracteis 5-6 mm. longis 3-fidis, laciniis subulatis; spiculae paucae oblongo-cylindricae 6-14 mm. longae et 3-4.5 mm. crassae purpurascentes, apice obtusissimae, 2-3.5 cm. longe pedicellatae, pedicellis striatis rigidis rectis, involucelli phyllis ovato-lanceolatis acuminatis floribus brevioribus; spiculae bractee lanceolatae floribus paullo longiores, calycis dentibus minutis, petalis apice emarginatis; carpella juvenilia densissime squamis hyalinis obsita.—Honduras: At edge of a small stream in pine forest near Siguatopeque, Dept. Comayagua, altitude about 1,100 m., February, 1928, *Paul C. Standley 56478* (Herb. Field Mus. No. 581,216, type).

This species, of which only a single individual was found, in spite of prolonged search, bears no very close resemblance to any other *Eryngium* of which I have seen material. It is noteworthy for its slender sedgeliike habit, long narrow leaves, and small slender flower spikes.

THEOPHRASTACEAE

Clavija Chermontiana, sp. nov.—Frutex vel arbor omnino glabra, ramulis crassis ferrugineis vel fusco-brunneis rimosis lenticellis paucis pallidis vix elevatis conspersis; folia alterna vel pseudoverticillata (3–4) petiolata, petiolo gracili 2.5–5.5 cm. longo subangulato basi plus minusve tumido; lamina coriacea obovato-oblonga, 20–30 cm. longa et 8.5–11 cm. lata et ultra, acuta vel abrupte acuminata, basin versus longe attenuata, integra vel obsolete et remotissime denticulata, in sicco luteoviridis, concolor, sublucida, costa supra non elevata, venis prominulis, costa subtus elevata crassiuscula, nervis lateralibus angulo lato divergentibus, fere rectis, juxta marginem conjunctis, gracillimis, prominulis, nervulis prominulis arcte et eleganter reticulatis; inflorescentiae racemosae laterales 6–8 cm. longae fere sessiles laxae multiflorae simplices, bracteis minutis pedicellis vulgo brevioribus ovatis acutis liberis, pedicellis crassis 1–2 mm. longis, floribus ut videtur saepe secundis; calyx 3.5 mm. latus, lobis 5 late rotundatis minute laciniato-ciliatis; corolla expansa fere 1.5 cm. lata, 7 mm. longa, tubo brevissimo, lobis 5 tubo triplo longioribus subintegris; staminodia 5 brevia incrassata subcucullata rotundata cum petalis alternantia; stamina in tubum brevissimum coalita, disco antherarum 10-dentato.—Brazil: Boa Vista, on the Tapajoz River, State of Pará, May–June, 1929, *B. E. Dahlgren & Emil Sella* 200 (Herb. Field Mus. No. 602,531, type).

In his monograph of the genus *Clavija* (in Engler's Pflanzenreich) Mez reports from the lower Amazon Valley a single species, *C. serrata* (Hoffmansegg) Mez, a plant with serrate leaves. The present plant does not agree in floral details with any of the species which he lists from other regions.

At the request of Dr. B. E. Dahlgren, this species is named for Snr. Bento Chermont, of the Museu Goeldi, to whom Field Museum is indebted for generous assistance during the Marshall Field Amazon Expedition in 1929 especially in connection with the photographing of the many type specimens contained in the Museu Goeldi's rich herbarium of Amazonian plants.

ASCLEPIADACEAE

Vincetoxicum Lundellii, sp. nov.—Volubilis, caulibus gracilibus viridibus glabris vel ad nodos strigillosis, internodiis valde elongatis; folia longe petiolata opposita, petiolo gracillimo 1.5–5 cm. longo glabro vel obscure et minutissime puberulo; lamina membranacea, ovato-triangularis, 3.5–6 cm. longa, 2–6 cm. lata, abrupte et longiuscule acuminata, acumine angusto attenuato acutissimo, basi profunde cordata, sinu 8–11 mm. longo et saepe latiore, lobis basalibus late rotundatis, utrinque glabra, supra ad basin glandulis 3–4 minutis instructa, subtus pallidior; flores breviter racemosi, racemis axillari-

bus solitariis 2-5 cm. longe pedunculatis paucifloris, bracteis minutis deciduis, pedicellis gracillimis c. 2.5 cm. longis glabris; sepala oblonga acuminata 2-2.5 mm. longa glabra; corolla ut videtur viridis, extus glabra, fere ad basin 5-fida, laciniis linearibus 1.5 cm. longis 2-2.5 mm. latis longe angustequae attenuatis, intus minute puberulis et secus medium prope basin albo-ciliatis, intus valde bicoloribus; corona annularis brevissima dense albo-hirtella; stigma pentagonum depressum 3 mm. latum.—British Honduras: Honey Camp, October, 1929, *C. L. Lundell* 540 (Herb. Field Mus. No. 603,593, type).

The plant is noteworthy for the very narrow corolla lobes, which bear a longitudinal line of stiff white hairs along the middle near the base.

VERBENACEAE

Stachytarpheta angustifolia (Mill.) Vahl.—So far as the writer knows, this easily recognized species has been known on the continent only from Yucatan, but it may now be recorded as a member of the Central American flora: British Honduras: Honey Camp, October 20, 1929, *C. L. Lundell* 626.

SOLANACEAE

Solanum palmillae, sp. nov.—Frutex inermis fere omnino glaber, ramulis subteretibus gracilibus viridibus glabris, internodiis brevibus; folia breviter petiolata sparsa, petiolo gracili glabro 6-15 mm. longo; lamina membranacea, oblanceolato-linearis vel fere linearis, 6.5-21 cm. longa, 4-17 mm. lata, versus apicem longissime sensimque attenuata, versus basin aequaliter attenuata, integra, utrinque laete viridis, glabra, costa supra plana vel prominula, venis inconspicuis, costa subtus prominente gracili, nervis lateralibus paucis remotis angulo acuto adscendentibus, nervulis inconspicuis; flores numerosi cymosi, cymis axillaribus vel subterminalibus dense paucifloris breviter pedunculatis, pedicellis gracilibus plerumque 4-7 mm. longis glabris; calyx vix 2 mm. longus campanulatus sparse et minutissime stellato-lepidotus vel glaber, 5-denticulatus, dentibus triangularibus erectis acutis tubo multo brevioribus; corolla ut videtur alba, extus glabra, fere ad basin 5-fida, laciniis oblongis 6-7 mm. longis patentibus obtusis; antherae anguste oblongae 3 mm. longae obtusae, poris anterioribus.—Mexico: In rocky gulches, Rancho Palmilla, Veracruz, April, 1929, *C. A. Purpus* 13014 (Herb. Field Mus. No. 603,252, type). In arroyo, Camarón, Veracruz, October, 1926, *Purpus* 11049.

This appears to be a relative of the Mexican *S. aligerum* Schlecht., but among all the Mexican species of *Solanum* it may be recognized readily by the narrow and very much elongate leaves.

SCROPHULARIACEAE

Angelonia ciliata Robinson, Proc. Amer. Acad. 45: 400. 1910.

So far as now known, this clearly differentiated species is confined to British Honduras. Three recent collections may be placed on record: British Honduras: Near Tower Hill Estate, in 1928, *J. S. Karling* 1. Honey Camp, October, 1929, *C. L. Lundell* 580; October, 1928, *Lundell* 67.

GESNERIACEAE

Achimenes Calderonii, sp. nov.—Herba debilis ut videtur perennis, erecta vel suberecta, simplex, caule c. 15 cm. alto gracili obtuse tetragono satis dense pilis longis patentibus gracillimis viscido-villoso, internodiis elongatis; folia longe petiolata opposita saepe inaequalia, petiolo gracillimo 1–3 cm. longo viscido-villoso; lamina tenuiter membranacea, elliptico-oblonga vel oblongo-ovata, 5–10.5 cm. longa, 2–4 cm. lata, longiacuminata, basi acuta vel obtusa et abrupte breviterque decurrens, grosse crenata, supra laete viridis, sparse villosula, subtus pallidior, sparse, ad nervos densius, viscido-villosula, costa crassiuscula prominente, nervis lateralibus utroque latere c. 10, angulo acuto adscendentibus leviter arcuatis, in marginem desinentibus; flores axillares solitarii vel rarius geminati, pedicellis gracillimis c. 9 mm. longis dense viscido-villosis; calyx extus dense viscido-villosulus, tubo c. 1.2 mm. longo, lobis 5 viridibus ovatis vel oblongo-ellipticis 5 mm. longis acutis vel acuminatis integris subaequalibus in fructu persistentibus et suberectis; corolla pallida extus glabra intus in tubo purpureo-punctata, tubo crasso 9 mm. longo superne sensim dilatato, ore c. 5 mm. lato, lobis 5 late rotundatis c. 3 mm. latis subrecurvis integris; stylus calyce paullo longior, in fructu saepe recurvus; capsula 3 mm. longa basi obtusa villosa.—Salvador: San Juan de Tepezontes, in 1929, *Salvador Calderón* 2542 (Herb. Field Mus. No. 603,260, type).

ACANTHACEAE

Diateinacanthus hondurensis Lindau, Bull. Herb. Boiss. II. 5: 369. 1905. *Odontonema paniculiferum* Blake, Contr. Gray Herb. 52: 104. 1917.

Whether the genus *Diateinacanthus* is a valid one, the writer is not prepared to decide, but it was so considered by Lindau, who did some of the best and some of the worst work upon the American Acanthaceae. The herbarium of Field Museum possesses a photograph of the type specimen, in the herbarium of the New York Botanical Garden, collected at Puerto Sierra (now Tela), Honduras, in 1903 by Percy Wilson, No. 129. Through the courtesy of Dr. B. L. Robinson, there has been examined also the type specimen of

Odontonema paniculiferum Blake, which is clearly conspecific. It was collected in forest near Manatee Lagoon, British Honduras, in January, 1906, *M. E. Peck 278*.

The following recent collections of this plant may be cited: Honduras: Lancetilla Valley, near Tela, Dept. Atlántida, in wet forest, *Standley 53203, 53986, 52624, 52615*. Lancetilla Valley, along stream, *W. D. Hottle 104*. It is a rather handsome, slender shrub, sometimes as much as 2.5 m. high, with pale yellow flowers.

RUBIACEAE

***Manettia poliodes*, sp. nov.**—Frutex (?) scandens, caulibus vetustioribus stramineis vel pallide brunnescentibus subteretibus crassiusculis, novellis pilis brevibus brunnescentibus patentibus vel interdum subreflexis dense villosulo-tomentosis, internodiis brevibus vel elongatis; stipulae erectae persistentes c. 2 mm. longae apice remote 3-denticulatae dense tomentosae; folia petiolata opposita, petiolo gracili 3-12 mm. longo dense tomentoso; lamina ovato-elliptica vel oblongo-ovata, 4-8 cm. longa, 2-4 cm. lata, membranacea, abrupte sensimve acuminata, acumine acutissimo, basi rotundata vel obtusissima, supra viridis, sparse villosula vel adpresso-pilosula vel glabrata, venis non elevatis, subtus grisea vel ochracea, undique dense tomentosa, costa gracili elevata, nervis lateralibus utroque latere 6-7, gracillimis, prominulis, arcuatis, prope marginem conjunctis; inflorescentiae axillares foliis multo breviores, umbellatocymosae, laxae multiflorae, supremae interdum sessiles et umbelliformes, usque ad 1 cm. longe pedunculatae, pedicellis gracilibus 5-13 mm. longis dense albido-tomentosis; bractaeae plerumque minutae, interdum 2 mm. longae, ovatae, acutae, tomentosae; calyx 4-partitus, laciniis 4 ovatis basi contractis apice acutis vel acuminatis, extus dense tomentosus, intus glabris vel glabratis, patentibus vel suberectis; corolla violacea, extus glabra, tubo 7-10 mm. longo crassiusculo superne paullo dilatato, lobis 4 triangulari-ovatis 2-2.5 mm. longis acutis, suberectis vel paullo patentibus; stylus breviter exsertus; capsula subglobosa c. 5 mm. longa, basi obtusa, subdense tomentosa, calyce persistente coronata.—Peru: In thicket, Marcapata Valley near Chilechile, Prov. Quispicanchi, Dept. Cuzco, alt. 2,500 m., February 21, 1929, *A. Weberbauer 7868* (Herb. Field Mus. No. 605,052, type). Below Lares, Prov. Calca, Dept. Cuzco, alt. 3,100-3,200 m., March 7, 1929, in thicket, *Weberbauer 7890*.

A species well marked by its bicolored leaves, small glabrous corollas, and broad leafy calyx lobes.

***Manettia Albert-Smithii*, sp. nov.**—Volubilis herbacea, caulibus gracilibus ut videtur olivaceis glabris, internodiis valde elongatis; stipulae 2-2.5 mm. longae virides in vaginam connatae acutae interdum remote carnosio-fimbriatae glabrae erectae persistentes; folia

petiolata opposita, petiolo crassiusculo 5–7 mm. longo glabro supra sulcato interdum anguste marginato; lamina coriacea oblongo-lanceolata vel anguste ovata 5–7 cm. longa, 1.5–3 cm. lata, longissime angustaque acuminata, basi obtusa vel rarius subacuta, glabra, supra in sicco pallide viridis, costa venisque valde impressis, subtus paullo pallidior, interdum flavescens, costa valida elevata, venis utroque latere 3 prominentibus, angulo acutissimo adscendentibus, leviter arcuatis, marginem fere attingentibus, venulis obsoletis, margine saepe revoluti; inflorescentiae racemiformes axillares solitariae vel fasciculatae, foliis paucis reductis onustae vel nudaе, 2–9 cm. longae, dense vel laxe multiflorae, interdum tantum umbelliformes et pauciflorae, floribus plerumque 1–2 mm. longe pedicellatis interdum congestis; hypanthium obovoideum glabrum 2–2.5 mm. longum; calyx 4-partitus, laciniis erectis viridibus coriaceis planis lanceolatis vel lanceolato-oblongis c. 6 mm. longis (in statu fructifero usque ad 10 mm.), acutis vel acuminatis, scaberulo-ciliatis, persistentibus; corolla alba extus glabra, tubo crasso 6–7 mm. longo fauce 3–3.5 mm. lato, lobis 4 anguste triangulari-oblongis 6–7 mm. longis patentibus obtusis, intus pilis longis multicellularibus satis dense villosis; antherae semi-exsertae vel inclusae; stylus longe exsertus; capsula immatura subglobosa 6–7 mm. longa et fere aequilata, basi obtusa vel abrupte contracta et acutiuscula, glabra.—Peru: Wooded hillside, Ccarrapa, between Huanta and Río Apurímac, Dept. Ayacucho, alt. 1,200 m., May, 1929, *E. P. Killip and A. C. Smith 22418* (Herb. Field Mus. No. 607,883, type). In thickets, Aina, between Huanta and Río Apurímac, Dept. Ayacucho, 750–1,000 m., May, 1929, *Killip & Smith 23104*.

The species is a very well-marked one by reason of its thick hard leaves, lack of pubescence, exceptionally long and leafy calyx-lobes, and very long corolla lobes. It resembles the Peruvian *M. leucantha* Krause, which has much shorter calyx lobes.

Manettia Jorgensenii, sp. nov.—Volubilis, caulibus gracilibus, vetustioribus ochraceis et cortice suberoso obtectis, novellis viridibus gracillimis dense breviterque villosis, internodiis foliis longioribus; stipulae 1.5 mm. longae suberectae in vaginam brevem connatae, parte libera anguste triangulari acuminata, sparse villosae vel glabratae; folia brevissime petiolata opposita, petiolo villosi 1–2.5 mm. tantum longo; lamina membranacea oblongo-ovata vel lanceolato-oblonga 2–5 cm. longa, 0.8–2 cm. lata, acuta vel sensim acuminata, breviter et subadpresse villosula, costa venisque non elevatis, subtus vix pallidior, subsparsae villosa, costa gracili elevata, nervis lateralibus utroque latere c. 3, angulo acuto valde adscendentibus, venulis obsoletis; flores pauci in racemos breves axillares foliaceos dispositi, pedicellis gracilibus plerumque 4–6 mm. longis villosulis; hypanthium late obovoideum 1.2 mm. longum basi acutiusculum sparse villosulum; calyx 4-partitus, laciniis lanceolatis 1.5 mm. longis subulato-attenuatis sparse villosulis subpatentibus; corolla alba extus glabra, tubo crassiusculo 4 mm. longo et 1.5 mm. lato, lobis 4 patentibus 2

mm. longis acutis intus dense villosis.—Argentina: Las Pavas, a vine 2–3 m. long, *P. Jørgensen* 1908 (U. S. Nat. Herb. No. 922,124, type).

In general appearance as well as in details this plant is similar to *M. Guillemianiana* Schum., of Rio de Janeiro, but that species differs in having a puberulent corolla.

Syringantha, gen. nov.—Frutices erecti; stipulae interpetiolares minutae subulatae caducae; folia opposita breviter petiolata, lamina angusta integra; inflorescentiae terminales cymoso-paniculatae, ramis plus minusve secundifloris, floribus aureis mediocribus pedicellatis bracteatis; hypanthium obovoideo-turbinatum; calyx brevis 5-dentatus, dentibus triangularibus acutis persistentibus; corolla tubulosa elongata angusta extus glabra, intus ad insertionem staminum villosa, fauce glabra, lobis 5 brevissimis erectis latioribus quam longis imbricatis, 2 exterioribus; stamina 5 supra basin tubi inserta, filamentis elongatis filiformibus glabris, antheris basifixis linearibus obtusis semiexsertis; discus annularis tumidus; ovarium 2-loculare; stylus filiformis glaber exsertus, stigmatibus minuto capitato; ovula in loculis numerosis, placentis septo adnatis insertis, adscendentibus; capsula oblonga 2-locularis, septicide bivalvis, valvis ut videtur integris, paucisperma; semina imbricata nucleo compresso, testa in alam latam tenuem producta.

Type species, *Syringantha loranthoides* Standl.

Syringantha loranthoides, sp. nov.—Frutex arborescens sive arbuscula c. 2.5 m. alta dense ramosa, ramis vetustioribus crassiusculis subteretibus fusco-brunneis rimosis, novellis olivaceis obtuse tetragonis dense minuteque puberulis, internodiis plerumque 4–8 mm. longis; stipulae triangulari-subulatae c. 1.5 mm. longae; petioli plerumque 4–6 mm. longi minutissime puberuli vel glabrati supra leviter sulcati; lamina coriacea anguste lanceolato-oblonga vel lineari-lanceolata, 2–5 cm. longa, 4–14 mm. lata, versus apicem sensim angustata, apice ipso obtuso, basi acuta, supra in sicco luteo-viridis, glabra vel ad costam planam minutissime sparseque puberula, subtus concolor, glabra vel tantum ad costam minute puberula, costa gracili elevata, venis obsoletis; inflorescentiae laxae multiflorae sessiles vel 1–2 cm. longe pedunculatae, e basi trichotomae vel saepe fastigiato-ramosae, 4–6 cm. longae et interdum latiores, ramis dense et minutissime puberulis, bracteis subulatis vel anguste triangularibus c. 1 mm. longis, floribus saepius secundis, pedicellis rectis plerumque 3–4 mm. longis minute puberulis; hypanthium 2–2.5 mm. longum minutissime puberulum vel glabrum; calyx glaber, dentibus vix 1 mm. longis; corolla aurea, tubo c. 18 mm. longo superne paullo dilatato et 2–2.5 mm. lato, lobis c. 1.5 mm. longis et paullo latioribus obtusissimis; stamina 4 mm. supra basin tubi inserta, filamentis gracillimis 10–12 mm. longis, antheris 8 mm. longis; stylus c. 24 mm. longus; capsula 5–7 mm. longa 2.5–3 mm. crassa, conspicue supra calycem

persistentem protracta, ferruginea, glabra; semina pauca c. 1.5 mm. longa brunnea.—Mexico: Entre San Diego y la Hacienda de Santiaguillo, July, 1842, *Karwinsky 308*. Santiaguillo, July, 1842, *Karwinsky*. El Pantario (?) et in Santiaguillo, April, 1843, *Karwinsky 308b*. Santiaguillo, October, 1842, *Karwinsky 308c* (original number 31). Specimens all in Leningrad Herbarium.

The collector's notes read: "Frutex arborescens 8-pedalis pulcherrima; flores aurei. An *Chelone*?" The shrub must be a handsome one because of its profuse, rather large flowers. The general effect in the dried specimens reminds one somewhat of certain species of the genus *Loranthus* and its allies. The foliage is strikingly suggestive, also, of that of the genus *Vallesia*.

The genus *Syringantha* evidently is a close relative of *Exostema*, of the tribe Cinchoneae, but the corollas are conspicuously different in the two genera. In *Exostema* the corolla lobes are elongate, often very much so, narrow, and usually spreading or even recurved.

Macrocnemum latilimbum, sp. nov.—Frutex, ramulis crassiusculis brunnescentibus vel ochraceis rimosis, novellis glabris, internodiis brevibus; stipulae deciduae, non visae; folia breviuscule petiolata opposita, petiolo gracili 2-3 cm. longo minute griseo-puberulo; lamina membranacea oblongo-obovata, 12-15.5 cm. longa, 5-7 cm. lata, breviter acuminata, basin versus angustata, basi ipsa acuta, supra in sicco fusca, glabra, costa nervisque non elevatis, subtus fusco-brunnescentis, ad nervos breviter cinereo-hirtella, aliter glabra vel glabrata, costa gracili elevata, nervis lateralibus utroque latere c. 10, angulo acuto adscendentibus, prominentibus, gracillimis, subarcuatis, prope marginem conjunctis, nervulis prominulis laxissime reticulatis; inflorescentia terminalis cymoso-paniculata laxa multiflora, c. 15 cm. longa et fere aequilata, ramis glabris vel sparse et minutissime puberulis, bracteis primariis foliaceis et foliis conformibus, aliis triangularibus vel anguste oblongis 2-5 mm. longis acutis subpatentibus, floribus saepe subumbellatis, sessilibus vel 1-3 mm. longe pedicellatis, pedicellis minute griseo-puberulis; hypanthium 4-5 mm. longum anguste oblongo-clavatum basin versus angustatum minute griseo-puberulum; calyx 1.5 mm. longus breviter dentatus, dentibus triangularibus acutis; corolla rosea extus minutissime griseo-puberula, tubo gracili 8 mm. longo superne paulo dilatato, lobis 5 lanceolato-oblongis 8 mm. longis acutis vel acuminatis patentibus, interdum ovatis, intus minute puberulis.—Colombia: Bucamaranga, Prov. Pamplona, alt. 1,200 m., February, 1848, *L. Schlim 1670* (Leningrad Herb., type).

A relative of *M. roseum* (R. & P.) Wedd., which likewise grows in Colombia, but in that species the corolla is glabrous, the leaves obtuse, and the pubescence ferruginous.

Bouvardia Karwinskyi, sp. nov.—Frutex 1–1.5 m. altus dense ramosus, ramulis gracilibus, vetustioribus ferrugineis vel brunneis, novellis sparse minuteque puberulis vel glabris, internodiis brevibus vel elongatis; stipulae persistentes sparse puberulae, basi in vaginam brevem fere 2 mm. longam connatae, parte libera lineari-subulata erecta attenuata viridi 2–3 mm. longa; folia opposita, axillis plerumque ramulis brevissimis et densissime foliatis instructis, linearia vel anguste linearia, 3–4.5 cm. longa, 1–3 mm. lata, versus apicem subulatum attenuata, basin versus sensim angustata et brevissime petiolata, 1-nervia, ad margines minutissime scaberula, aliter glabra, costa subtus prominente; flores terminales solitarii sessiles vel usque ad 3 mm. longe pedicellati; hypanthium turbinato-oblongum 4 mm. longum glabrum; calyx 4-partitus, laciniis anguste linearibus 15–26 mm. longis foliis conformibus, apice subulatis, ad margines minute scaberulis, erectis, viridibus; corolla alba extus glabra, tubo gracillimo 3.5–5 cm. longo, supra vix dilatato, ore 3 mm. lato, lobis 4 patentibus ovato-oblongis c. 12 mm. longis et 4–5 mm. latis acutiusculis intus glabris; antherae inclusae; capsula (perfecta non visa) fere 1 cm. longa.—Mexico: Between Victoria and Río Blanco, in 1842, *Karwinsky 312* (type). Hacienda de Santiaguillo, August, 1842, *Karwinsky 312c*. Without definite locality, July, 1842, *Karwinsky 312b*. All specimens in the Leningrad Herbarium.

The collector's notes state that the plant is a shrub of four to five feet, the very fragrant white flowers with the odor of jasmine.

Bouvardia Karwinskyi is one of the most clearly distinct species which I have ever had occasion to describe. It is evidently a relative of *B. longiflora* (Cav.) HBK., but the only member of the group centering about that species with which it could be confused is *B. erecta* (DC.) Standl. The latter is similar only in having narrow leaves, but they are only 5–16 mm. long, and the calyx lobes are merely 2.5–6 mm. long. In habit the two species are quite unlike, and they bear little general resemblance to each other. The dense, very long and narrow leaves of *B. Karwinskyi*, and the long corollas, give the whole plant an aspect which reminds one strongly of some species of the genus *Ansonia*.

Remijia bracteata, sp. nov.—Ramuli graciles grisei vel fusco-grisei, vetustioribus glabratis, novellis sparse brunneo-strigosis, internodiis brevibus vel elongatis; stipulae oblongo-ellipticae deciduae c. 15 mm. longae et 7 mm. latae tenues acutae, extus sparse strigosae vel glabratae, erectae; folia breviter petiolata opposita, petiolo crassiusculo 5–8 mm. longo supra breviter sulcato sparse strigilloso vel glabrato; lamina coriacea elliptico-oblonga, 8.5–14.5 cm. longa, 3–5.5 cm. lata, abrupte acuminata, acumine angusto obtuso, basi acuta, supra lucida, glabra, costa venisque manifestis sed vix elevatis, subtus paullo pallidior, fere omnino glabra, costa gracili elevata, nervis lateralibus utroque latere c. 11 angulo acuto latove adscendentibus,

gracilibus, elevatis, arcuatis, prope marginem conjunctis, nervulis obscuris laxe reticulatis; inflorescentiae axillares cymoso-corymbosae c. 6 cm. latae trichotomae 5–12 cm. longe pedunculatae, ramis subdense ferrugineo-strigosis, bracteis basalibus 2 linearibus plerumque 10–13 mm. longis attenuatis, superioribus lanceolatis vel oblongis acuminatis extus dense strigosis calyces fere aequantibus persistentibus, floribus dense congestis sessilibus vel brevissime pedicellatis; hypanthium 2 mm. longum dense adpresso-pilosum; calycis laciniae lanceolatae 5–6 mm. longae attenuatae extus sparse strigosae intus glabrae; corolla non visa; capsula oblonga 1–1.5 cm. longa, 5–7 mm. lata, leviter bisulcata, obtusa, basi acuta, ferruginea, sparse strigillosa vel glabrata, septicide bivalvis.—Colombia: Barranca Vermeja, Río Magdalena, July, 1868, *William Weir* 75 (Herb. Kew., type).

The species is noteworthy for the large persistent bracts.

Remijia peruviana, sp. nov.—Frutex vel arbor parva 2–5-metralis, ramulis vetustioribus obtuse tetragonis gracilibus vel crassiusculis brunnescentibus vel fusco-ferrugineis, novellis valde compressis sparse adpresso-pilosulis vel glabris, internodiis elongatis; stipulae mox deciduae tenues ovales vel oblongae dense strigosae apice obtusae vel rotundatae; folia breviter petiolata opposita, petiolo crasso 5–15 mm. longo glabrato; lamina coriacea elliptica vel late ovata, 8–17 cm. longa, 4–9 cm. lata, acuta, apice ipso obtuso, basi acuta vel saepe rotundata vel subtruncata, interdum abrupte contracta et breviter decurrens, supra sublucida, glabra vel tantum ad venas minute adpresso-pilosula, costa venisque prominulis, venulis obsoletis, subtus paullo pallidior, in sicco saepe brunnescens, praesertim ad venas adpresso-pilosula vel fere glabra, costa gracili valde elevata, nervis lateralibus utroque latere c. 16 elevatis gracilibus, angulo lato interdum fere recto abeuntibus, fere rectis vel leviter curvis, prope marginem obscure conjunctis, venulis vix prominulis arcte reticulatis, margine saepe revoluti; inflorescentiae axillares solitariae 5–12 cm. longe pedunculatae folia circa aequantes, cymoso-paniculatae, parvae, dense multiflorae, vulgo 2.5–4 cm. longae et latiores, cyma solitaria parva infra inflorescentiam principalem prope medium pedunculi interdum inserta, ramis brevibus adscendentibus vel divaricatis rigidis dense pilis brevibus adscendentibus fulvis pilosis, bracteis persistentibus brevibus lanceolatis vel linearibus extus dense adpresso-pilosulis, floribus dense congestis sessilibus vel vix 1 mm. longe pedicellatis; hypanthium ovale vel oblongum fere 1.5 mm. longum basi obtusum dense pilis brevibus fulvis adpressis indutum, calyce 1–1.3 mm. longo extus dense adpresso-pilosulo ad medium 5-fido, lacinii ovatis vel lanceolatis erectis acutis; corolla alba extus dense fulvo-sericea, tubo gracili 8–11 mm. longo c. 1 mm. lato, lobis 5 anguste lanceolatis 5–6 mm. longis attenuatis intus sparse puberulis patentibus; stylus 3–4 mm. longus gracillimus glaber; capsula anguste oblonga ferruginea 12–15 mm. longa et 4–5 mm. lata, sparse minuteque adpresso-pilosula, basi acuta, apice calyce persistente coronata, valvis apice brevissime bifidis vel integris, seminibus numerosis late alatis.—Peru: Near Marana, vicinity of Iquitos, Dept. Loreto, July

17, 1929, *Llewelyn Williams 1512* (Herb. Field Mus. No. 604,643, type). Punchana, near Iquitos, *Williams 1333*. Palta Cocha, on the Upper Río Nanay, Dept. Loreto, *Williams 3190*. Marana, *Williams 1511*. Forest between Río Nanay and Río Napo, *Williams 675*. Lower Río Nanay, *Williams 340*. Iquitos, *Killip & Smith 27296, 26973*. Tarapoto, *Spruce 4581*. Nauta, secus ostiam Ucayali, *Spruce 3857*.

Vernacular names, "cascarilla" and "collar lisa."

Remijia peruviana is related to *R. tenuiflora* Benth., with which some of the collections have been confused, but the latter species differs in its much larger corolla, longer and narrower calyx lobes, and few-flowered inflorescence. *Remijia megistocaula* Krause, also described from Peru, has smaller capsules and leaves with different venation and pubescence.

***Ladenbergia malacophylla*, sp. nov.**—Arbor 6–12-metralis, ramulis crassis fuscis, novellis subcompressis dense pilosulo-tomentosis, internodiis brevibus; stipulae caducae, non visae; folia petiolata opposita, petiolo crasso 4–5 cm. longo dense tomentoso supra anguste sulcato; lamina rigide membranacea late ovalis vel late elliptica, 22–26 cm. longa, 14–18 cm. lata, apice obtusa vel fere rotundata, basi late rotundata vel breviter cordata, supra in sicco fusca, dense pilosula, aspera, costa anguste sulcata, venis prominulis, subtus ubique dense pilis rigidiusculis fulvis velutino-pilosa, costa crassiuscula elevata, nervis lateralibus utroque latere c. 14 angulo recto vel lato abeuntibus, gracilibus, prominentibus, leviter curvis vel fere rectis, juxta marginem conjunctis, nervulis prominulis transversis subparallelis; inflorescentia terminalis cymoso-paniculata 2–4 cm. longe pedunculata, pyramidalis vel corymbiformis, dense multiflora, c. 14 cm. longa et aequilata, ramis crassis subcompressis adscendentibus vel divaricatis dense fulvo-tomentosis, bracteis inconspicuis mox deciduis, floribus dense cymoso-aggregatis sessilibus vel 1–2 mm. longe pedicellatis; hypanthium oblongo-turbinatum 4–5 mm. longum dense pilis adscendentibus ochraceo-pilosum, calyce 2–2.5 mm. longo ad medium 5-fido, laciniis ovatis vel triangularibus erectis obtusis vel acutiusculis extus adpresso-pilosulis vel glabratibus; corolla alba extus dense sericea, tubo gracili 22–24 mm. longo 3–4 mm. lato superne vix dilatato, lobis 5 anguste oblongo-lanceolatis c. 1 cm. longis versus apicem attenuatis intus minute puberulis; stylus gracilis glaber; capsula oblonga 2.5–4.5 cm. longa fusco-ferruginea sparse puberula vel adpresso-pilosula basi acuta, apice acutiuscula et calyce persistente coronata, valvis crassis dorso nervosis 1–1.5 cm. latis; semina magna pallide brunnescentia ala tenui laciniata cincta.—Peru: In dense forest, Pichis Trail, Porvenir, Dept. Junín, alt. 1,500–1,900 m., July 3–4, 1929, *E. P. Killip and A. C. Smith 25914* (Herb. Field Mus. No. 607,618, type). Pichis Trail, alt. 1,400 m., in dense forest, *Killip & Smith 25434* (U. S. Nat. Herb.).

A relative of *L. carua* (Wedd.) Standl.

Ferdinandusa hirsuta, sp. nov.—Arbor 10–12-metralis, ramulis subteretibus vel obtuse tetragonis crassis brunnescentibus dense ferrugineo-hirsutis, internodiis elongatis, internodio infra inflorescentiam glabro vel tantum ad nodos hirsuto; stipulae caducae, non visae; folia brevissime petiolata opposita, petiolo crasso 3–5 mm. longo dense hirsuto; lamina subcoriacea oblonga vel elliptico-oblonga 8–15 cm. longa, 4.5–7 cm. lata, breviter abrupteque acuminata, acumine anguste triangulari obtuso, basi obtusa vel anguste rotundata, supra sublucida, primo sparse hirsuta, mox glabrata, costa venisque ut nervuli prominulis, subtus fere concolor, subdense ferrugineo-hirsuta, costa crassiuscula elevata, nervis lateralibus utroque latere c. 11 obliquis, angulo lato adscendentibus, gracilibus, prominentibus, fere rectis, versus apicem abrupte curvis et juxta marginem conjunctis, nervulis prominulis arcte reticulatis; inflorescentia terminalis sessilis cymoso-corymbosa dense multiflora, 2–2.5 cm. longa et paullo latior, ramis crassis rigidis glabris, bracteis ovatis vel late triangularibus 1–2 mm. longis glabris persistentibus acutis vel acuminatis, floribus plerumque in cymulas densas trifloras dispositis, pedicellis crassis 1–2 mm. longis; hypanthium turbinatum glabrum angulatum 2.5–3 mm. longum basi acutum, calyce brevissimo c. 0.8 mm. longo remote 5-denticulato discum crassum lobulatum vix superante, denticulis acutis vel acuminatis; corolla alba extus glabra, tubo gracillimo 26–37 mm. longo 1.2 mm. lato, supra vix dilatato, fauce 2.5 mm. tantum lato, lobis 5 ovalibus vel ovatis 4–5 mm. longis patentibus late obtusis intus glabris; capsula anguste oblonga 4–4.5 cm. longa glabra fusco-ferruginea, basi acuta, valvis c. 13 mm. latis nervosis.—Brazil: In dense forest, Manaos, State of Amazonas, alt. 25 m., October 17, 1929, *E. P. Killip and A. C. Smith 30159* (Herb. Field Mus. No. 607,638, type).

The species is easy to recognize because of the abundant pubescence of coarse, stiff, spreading, ferruginous hairs.

Ferdinandusa Paxii Winkl. Repert. Sp. Nov. 7: 249. 1909.

The species was based on material collected at San Antonio, near Mapiri, Bolivia, and it is represented by several collections from that country. A recent collection from Peru is referable to the same species: Peru: Mishuyacu, near Iquitos, Dept. Loreto, alt. 100 m., in 1929, *G. Klug 294*; a tree 6 m. high, the flowers white.

Tresanthera pauciflora (Soler.) Schum. in E. & P. Nat. Pflanzenfam. IV. 4: 19. 1891.

In the admirable account of the Rubiaceae by R. O. Williams and E. E. Cheesman in the Flora of Trinidad and Tobago (1928) there is no mention of this plant, but the following specimens are in the herbarium of Field Museum: Tobago: In sylvis ad Cremorue River, alt. 360 m., November, 1889, *Eggers 5812*; a tree 3.5 m. high;

flowers yellowish white. Easterfield, December 20, 1912, *Broadway 3076*; a small tree with "pale white" flowers.

This species, if it be distinct, is the second of the genus, the other being *T. condamineoides* Karst., of Venezuela. So far as I know, no description of *T. pauciflora* has been published, and the parenthetical citation of Solereder by Schumann (l. c.) is unexplained. Probably the reference is to an herbarium name.

***Rustia longifolia*, sp. nov.**—Omnino glabra, ramulis crassis obtuse tetragonis fusco-ferrugineis, internodiis 1–3 cm. longis, novellis in sicco subcompressis; stipulae persistentes arcte adpressae c. 1 cm. longae ovato-triangulares acutae; folia brevissime petiolata opposita, petiolo crasso 0.5–1.5 cm. longo; lamina membranacea anguste oblanceolato-oblonga 20–40 cm. longa, 5–10 cm. lata, longe acuminata, acumine angusto longe attenuato, basin versus longe sensimque attenuata, supra in sicco fusca, lucida, costa prominente, venis vix elevatis, subtus fere concolor, costa gracili elevata, nervis lateralibus utroque latere c. 20 angulo lato interdum fere recto abeuntibus, gracilibus, prominentibus, fere rectis vel leviter arcuatis, prope marginem conjunctis, nervulis prominulis arcte reticulatis; inflorescentia terminalis 20 cm. longe pedunculata late paniculata corymbiformis, c. 30 cm. longa et aequilata, ramis paucis oppositis longe nudis subpatentibus vel late adscendentibus, versus apicem cymoso-ramosis, basi bracteatis, bracteis linearibus usque ad 2 cm. longis, infimis foliaceis, floribus in cymulas laxas plerumque trifloras dispositis, plerumque 3–5 mm. longe pedicellatis; capsula immatura clavato-cylindracea 1.5–1.8 cm. longa, 4–5 mm. crassa, basi acuta, conspicue costata, disco calyce brevior; calyx ad apicem capsulae persistens fere 2 mm. longus breviter 5-lobus, lobis late rotundatis; semina numerosa minuta angulata. — Colombia: Between Santa Marta and Marsella, Territorio del Caquetá, August, 1926, *G. Woronow and S. Juzepczuk 6426* (Leningrad Herb., type).

Apparently this plant is rather closely related to *Rustia splendens* (Karst.) Standl., a Colombian species, but the latter has deciduous stipules and a dense thyriform panicle, very different from the corymb-like panicle of *R. longifolia*.

***Hillia Killipii*, sp. nov.**—"Arbor 3–4.5 m. alta omnino glabra," ramulis crassis subteretibus fusco-ferrugineis transverse asperatis, novellis tetragonis sulcatis, internodiis brevibus; stipulae tenues brunnescentes deciduae anguste oblongae 2.5 cm. longae apice rotundatae; folia petiolata opposita, petiolo gracili supra leviter sulcato 1–1.5 cm. longo; lamina tenuiter coriacea elliptico-oblonga 7.5–9.5 cm. longa, 3–3.5 cm. lata, longe abrupteque acuminata, acumine angusto longe attenuato, basi acuta, interdum breviter decurrens, supra in sicco fusca, costa venisque leviter impressis, lucida, subtus pallidior, brunnescent, lucida, ubique dense et minutissime puncticulata, costa

gracili elevata, nervis lateralibus utroque latere c. 6 obliquis, angulo acuto adscendentibus, gracilibus, elevatis, fere rectis, prope marginem conjunctis, nervulis obsoletis; flores terminales solitarii sessiles stipulis 2 involucrati; hypanthium late cylindraceum 3 mm. longum, calyce obsoleto; corolla alba, tubo gracili 7.5–8 cm. longo, prope medium 4 mm. lato, ad faucem paullo dilatato et 6 mm. lato, lobis 6 lanceolato-linearibus longe sensimque attenuatis patentibus 4–4.5 cm. longis, 4–5 mm. latis; stamina inclusa.—Peru: In dense forest, Pichis Trail, between San Nicolás and Azupízú, Dept. Junín, alt. 650–900 m., July 6, 1929, *E. P. Killip and A. C. Smith 26085* (Herb. Field Mus. No. 607,604, type).

The species is marked by its comparatively small and conspicuously veined leaves, and by the relatively long and narrow corolla lobes.

***Rondeletia gonzaleoides*, sp. nov.** —Frutex, ramulis gracillimis subteretibus glabris, internodiis 5–6 cm. longis; stipulae persistentes erectae triangulares 2 mm. longae acuminatae glabrae; folia breviter petiolata opposita, petiolo gracili 5–7 mm. longo glabro; lamina membranacea lanceolato-oblonga 6–12.5 cm. longa, 2–3.5 cm. lata, subabrupte et longissime caudato-acuminata, acumine 1–2.5 cm. longo angusto sensim attenuato apice obtuso, basi acuta, glabra, supra viridis, nervis vix elevatis, subtus paullo pallidior, costa gracili elevata, nervis lateralibus utroque latere c. 6, angulo latiusculo adscendentibus, gracillimis, arcuatis, prominulis, marginem fere attingentibus, nervulis laxè reticulatis; inflorescentia terminalis anguste thyrsoido-paniculata sessilis, basi foliis 2 reductis fulcrata, c. 14 cm. longa et basi 3.5 cm. lata, subaxe multiflora, glabra, ramis brevibus adscendentibus secundifloris, bracteis persistentibus linearibus vel subulatis 0.5–3 mm. longis, floribus sessilibus vel vix 1 mm. longe pedicellatis; hypanthium ovali-oblongum c. 0.8 mm. longum; calyx 4-partitus, laciniis anguste triangularibus vel triangulari-oblongis c. 0.5 mm. longis acutis saepius patentibus; corolla alba glabra, tubo gracili 6 mm. longo, lobis 4 rotundatis 1.8 mm. longis apice late rotundatis intus glabris. —Mexico: Pueblo Nuevo, Chiapas, altitude about 2,200 m., in 1840, *J. Linden 149* (Leningrad Herbarium, type).

This plant belongs to the group *Laniflorae* (see N. Amer. Fl. 32: 45. 1918), which is characterized by a terminal narrow thyrsoid spikelike inflorescence, but in all the species previously ascribed to the group the corolla is variously pubescent outside, rather than glabrous, as in this plant. The type specimen is annotated by Hemsley, and determined as "*Gonzalea* sp." It was so listed by that author (Biol. Centr. Amer. Bot. 2: 32. 1881), with the data "Humid forests of Zulusuchiapas." The incorrect locality data must have been taken from a label with some other specimen of the same number, since the proper locality name is written rather plainly upon the label which I have seen, nor is there any mention of "humid forests."

The plant does bear some general resemblance to the genus *Gonzalagunia* (of which *Gonzalea* is a synonym), but evidently it is referable rather to *Rondeletia*. In that group it is noteworthy for the complete absence of pubescence.

Deppea stenosepala, sp. nov.—Frutex, ramulis gracilibus teretibus brunnescentibus vel ochraceis, glabris vel ad nodos sparse breviterque pilosis, internodiis plerumque 1–1.5 cm. longis; stipulae persistentes erectae triangulares acutae; folia petiolata opposita, petiolo gracili 6–11 mm. longo glabro vel glabrato; lamina membranacea oblongo-ovata vel lanceolato-oblonga, 4–7.5 cm. longa, 1.5–3.5 cm. lata, subabrupte longiacuminata, acumine angusto longe attenuato, basi acuta vel acuminata, supra viridis, glabra, nervis non elevatis, subtus paullo pallidior, tantum ad nervos minutissime puberula vel glabra, costa gracili elevata, nervis lateralibus utroque latere c. 6 gracillimis arcuatis, angulo acuto adscendentibus, prominulis, juxta marginem conjunctis, nervulis vix elevatis laxe reticulatis; inflorescentiae axillares cymoso-paniculatae c. 1 cm. longe pedunculatae laxae multiflorae foliis multo breviores, ramis pedicellisque glabris, bracteis persistentibus linearibus plerumque 1–3 mm. longis, pedicellis gracilibus glabris 1–4 mm. longis; hypanthium glabrum; calyx 4-partitus, laciniis linearibus persistentibus patentibus saepe subinaequalibus 3–4 mm. longis viridibus glabris; capsula ovali-globosa c. 5 mm. longa et 4 mm. lata leviter compressa bisulcata glabra basi rotundata brunnescens.—Mexico: Tlajiacco to Chicahuitla, Oaxaca, in 1844, *H. Galeotti 2685* (Leningrad Herbarium, type).

The type material is decidedly fragmentary, but the characters exhibited are such as to leave no room for doubt that a very distinct new species is represented. It is easy of recognition because of the very long and narrow calyx segments.

Deppea Ehrenbergii, sp. nov.—Ramuli graciles subteretes luteo-virides glabri, internodiis 3.5–4 cm. longis; stipulae latissime triangulares subulato-acutae c. 1 mm. longae; folia petiolata opposita, petiolo gracili 1–2 cm. longo glabro; lamina membranacea elliptico-oblonga vel lanceolato-elliptica 10–15.5 cm. longa, 4–6 cm. lata, longe sensimque attenuato-acuminata, acumine acutiusculo, basin versus longe attenuata, glabra, supra laete viridis, costa venisque non elevatis, subtus luteo-viridis, pallidior, costa gracillima elevata, nervis lateralibus utroque latere c. 8 obliquis, angulo semirecto adscendentibus, prominulis, gracillimis, leviter curvis, prope marginem conjunctis, nervulis obscuris; inflorescentiae axillares usque ad 6 cm. longe pedunculatae laxissime multiflorae cymoso-paniculatae, usque ad 5.5 cm. longae et 9 cm. latae, ramis ut pedunculus gracillimis glabris subdivaricatis, bracteis minutis subulatis, floribus sparsis vel interdum subumbellatis, pedicellis gracilibus 2.5–6 mm. longis glabris; hypanthium late turbinatum 1 mm. longum glabrum, calyce ad basin 4-fido, laciniis triangularibus acutis 0.8 mm. longis; corolla 4.5 mm.

longa glabra in alabastro late obtusa, laciniis oblongis obtusis tubo plus quam duplo longioribus; capsula immatura 2.5 mm. longa basi acuta apice rotundata.—Mexico: Without definite locality, *C. Ehrenbergii* 1318 (Herb. Berol., type).

Related to *D. obtusiflora* Benth. and *D. grandiflora* Schlecht., both of which have larger corollas. The leaves of *D. grandiflora* are pubescent beneath, and those of *D. obtusiflora* are much smaller than in *D. Ehrenbergii*.

Chimarrhis Williamsii, sp. nov.—Ramuli vetustiores teretes crassiusculi ferruginei vel cinnamomei, novellis subcompressis minute sericeis mox glabratiss, internodiis 1–4.5 cm. longis; stipulae caducae erectae lineari-lanceolatae 13–15 mm. longae longe angustaeque attenuatae extus dense sericeae; folia petiolata opposita, petiolo gracili 1–2 cm. longo minute ciliolato; lamina crasse papyracea obovata 5–11 cm. longa, 3–5 cm. lata, acuta vel breviter acuminata, interdum subobtusa, basin versus longe cuneatim angustata, supra in sicco fusca, minutissime denseque puncticulata, glabra, costa venisque non elevatis, subtus brunnescens, primo subdense et minutissime adpresso-pilosula, mox glabrata, in axillis costarum minute scrobiculata et breviter barbata, costa gracili elevata, nervis lateralibus utroque latere c. 11 obliquis, angulo acuto adscendentibus, suboppositis, gracillimis, prominulis, leviter curvis, juxta marginem conjunctis, venulis obscuris non elevatis; inflorescentia terminalis vel pseudoaxillaris cymoso-corymbosa 5–7 cm. longe pedunculata dense multiflora, basi vulgo trichotoma, 4–6 cm. longa, 6–9 cm. lata, ramis rigidis validis adscendentibus dense ferrugineo-puberulis, bracteis lineari-subulatis usque ad 4 mm. longis deciduis, floribus sessilibus vel 1–2 mm. longe pedicellatis; hypanthium late obovoideum glabrum vix 1 mm. longum, calyce late campanulato 0.6 mm. longo breviter 5-dentato, dentibus late triangularibus acutiusculis ciliolatis; corolla extus glabra 2.5–3 mm. longa in alabastro apice stylo subexserto umbonata, fere ad basin 5-fida, laciniis oblongis obtusis intus glabris; stamina corolla paullo longiora, antheris oblongis 0.8 mm. longis, filamentis crassiusculis dense barbatis.—Peru: Lower Río Nanay, Dept. Loreto, May 23, 1929, *Llewelyn Williams* 409 (Herb. Field Mus. No. 601,986, type), 369.

Vernacular name, "tuwara."

The proposed species is related to *C. cymosa* Jacq. and *C. Hookeri* Schum., the latter described from eastern Peru, but both those species have glabrous stipules. *C. Hookeri*, of which I have seen no material, is described as having a puberulent calyx and hypanthium.

Gonzalagunia bunchosioides, sp. nov.—Frutex, ramulis crassiusculis teretibus densissime pilis rigidis ferrugineis hispido-strigosiss, internodiis elongatis usque ad 9 cm. longis; stipulae persistentes erectae 5–8 mm. longae e basi late triangulari longe angustaeque

attenuato-acuminatae dense strigosae; folia breviter petiolata opposita, petiolo 1-2.5 cm. longo gracili subtereti dense strigoso; lamina tenuiter membranacea ovata, oblongo-elliptica vel late elliptica, 11-26 cm. longa, 5.5-15 cm. lata, breviter vel longiuscule acuminata, basi acuta vel obtusa, interdum basin versus longe attenuata, supra viridis, sparse vel ad venas densius hispidula, saepe glabrata, costa venisque prominulis, subtus paullo pallidior, ubique breviter hispidula, interdum densissime pilis patentibus velutino-pilosula, costa gracili elevata, venis utrinque 9-14 angulo acuto adscendentibus, gracillimis, elevatis, arcuatis, venulis laxe reticulatis; paniculae spiciformes terminales 6-30 cm. longae et ultra, 1-4.5 cm. longe pedunculatae, remote multiflorae, rhachi gracili plus minusve flexuosa dense pilis fulvis rigidis subadpressis induta, floribus glomeratis sessilibus vel 1 mm. longe pedicellatis, bracteis viridibus paucis linearibus patentibus 3-7 mm. longis strigosis; hypanthium obovoideum 1.5 mm. longum dense pilis ochraceis adpresso-hispidulum; calyx 4-partitus, lobis ovalibus, late ovatis vel rotundatis, valde inaequalibus, 1-2 mm. longis, apice late rotundatis, viridibus, glabratissimis, persistentibus; corolla extus dense adpresso-pilosa in alabastro apice obtusa, tubo gracili 4-5 mm. longo, lobis 4 ovato-ovalibus 2-2.5 mm. longis apice rotundatis vel obtusis; bacca 4-locularis depresso-globosa 3.5-5 mm. lata dense adpresso-pilosula.—Peru (Department of Loreto): In forest, Pebas, on the Amazon River, July 26, 1929, *Llewellyn Williams* 1772 (Herb. Field Mus. No. 604,569, type), 1597, 1910, 1680, 1756, 1794.

This species is noteworthy for the very large and broad leaves, with chiefly spreading pubescence. It is related to *G. panamensis* (Cav.) Schum., which has been reported from Peru but probably does not occur there. *G. panamensis* differs from the present plant in its much longer and more slender corolla and in its small, acute or acutish calyx lobes.

***Isertia leiantha*, sp. nov.**—Ramuli crassi obtuse tetragoni subdense pilis brevibus adpressis albidis pilosuli, internodiis brevibus; stipulae persistentes 13-14 mm. longae triangulares tenues, extus glabrae vel glabratae, acuminatae, apice breviter bifidae; folia breviter petiolata opposita, petiolo crasso 1-3 cm. longo vel interdum fere nullo minute sericeo-strigilloso; lamina obovato-elliptica 19-35 cm. longa et ultra, 9.5-16 cm. lata, membranacea, abrupte breviterque acuminata, basi acuta vel interdum breviter acuminata vel contracta et decurrens, supra viridis, glabra, costa nervisque non elevatis, subtus pallida, sparse vel densius pilis minutis albidis adpressis pilosulis, ad venas densius induta, costa crassiuscula elevata, nervis lateralibus utroque latere c. 20, angulo lato adscendentibus, fere rectis, gracillimis, prominentibus, prope marginem arcuato-conjunctis, nervulis prominulis laxe reticulatis; inflorescentia terminalis thyrsoido-paniculata 3 cm. longe pedunculata, dense multiflora, 6-10 cm. longa, 5.5-7 cm. lata, ramis primariis rigidis compressis vel

angulatis sparse albido-strigosis vel scabris brevibus angulo lato patentibus, bracteis rigidis anguste triangularibus vel subulatis 4–6 mm. longis patentibus, floribus numerosissimis, alteris sessilibus, alteris 1–4 mm. longe pedicellatis; hypanthium hemisphericum calyce adjecto 3–4 mm. longum basi rotundatum, sparse scaberulum vel fere glabrum; calyx truncatus remote denticulatus, dentibus triangularibus acutis erectis; corolla (non perfecte evoluta) 3 cm. longa extus glabra, tubo gracili supra 4–5 mm. lato, lobis oblongo-ovatis 5 mm. longis obtusis ad margines minute puberulis.—Colombia: Peñas Blancas, Departamento de Antioquia, April 24, 1926, *S. Juzepczuk* 4478 (Herb. Field Mus. No. 605,640, type; duplicates in Leningrad Herbarium).

This plant is similar in most respects to *I. Haenkeana* DC., which occurs in Colombia, but in that the corolla is puberulent or tomentulose.

Coccocypselum Krauseanum, sp. nov.—Herba repens ad nodos radicans, caulibus crassiusculis glabris 2–2.5 mm. crassis, internodiis valde elongatis; stipulae anguste lineares 4–5 mm. longae glabrae basi cum petiolis in vaginam brevissimam connatae; folia longe petiolata opposita, petiolo crassiusculo 1.5–5 cm. longo glabro; lamina tenuiter membranacea rotundato-ovata vel late ovata, 5–7 cm. longa, 3–5 cm. lata, acute acuta, basi breviter cordata vel rarius truncata, supra viridis, glabra, venis subimpressis, subtus paullo pallidior, sparse, ad venas densius, adpresso-pilosa vel glabrata, costa crassiuscula prominula, venis utroque latere c. 8, angulo lato adscendentibus, gracilibus, vix prominulis, arcuatis, prope marginem conjunctis; inflorescentiae capitatae axillares solitariae sessiles vel usque ad 3.5 mm. longe pedunculatae dense multiflorae; bractae numerosae inaequilongae anguste lanceolatae vel subulatae sericeo-strigosae vel glabratae; hypanthium glabrum 1.5 mm. longum; calyx 4-partitus, laciniis lineari-attenuatis 3–4 mm. longis glabris vel sparse adpresso-pilosis; corolla rubra extus fere glabra, tubo crassiusculo 4 mm. longo, fauce abrupte dilatata 3.5 mm. longa, lobis latis obtusis vix 2 mm. longis prope apicem sparse hispidulis; bacca caerulea subglobosa 8–10 mm. longa glabra, calyce persistente coronata.—Brazil: Alto da Serra, São Paulo, in shady places, October 20, 1917, *F. C. Hoehne* 754 (Herb. Berol., type).

The only other species with sessile inflorescence reported from Brazil by Schumann in the *Flora Brasiliensis* is *C. aureum* Schlecht. & Cham., a very different plant with densely pubescent, narrow leaves. *C. Krauseanum* is not closely related to any other species of the genus known from Brazil.

The species is named for Dr. K. Krause, who has contributed so largely to our knowledge of the tropical American Rubiaceae. The writer is greatly indebted to him for the courteous loan of material for study purposes.

Coccocypselum Lyman-Smithii, sp. nov.—Herba perennis repens, caulibus gracillimis ramosis radicantibus usque ad 16 cm. longis dense pilis patentibus pallidis pilosis, internodiis plerumque 5–12 mm. longis; stipulae minutae pilis fere occultae c. 0.5 mm. longae; folia graciliter petiolata opposita, petiolo 1.5–3 mm. longo piloso; lamina herbacea orbicularis vel ovato-orbicularis 5–9 mm. longa et aequilata, apice obtusa vel late rotundata et apiculata, basi late rotundata, supra enervia, pilis longiusculis saepe fulvis et lucidis subadpressis densiuscule induta, subtus purpurascens, sparsius pilis longioribus patentibus pilosa, minute albido-puncticulata, costa nervisque paucis manifestis sed vix prominulis; flores axillares solitarii pedicellati, pedicellis gracilibus petiolis subaequilongis vel paullo longioribus dense villosopilosis, bracteolis linearibus 2–2.5 mm. longis obtusiusculis; hypanthium semiglobosum 1–1.5 mm. longum dense pilosum; calyx 4-partitus sparse villosulus, laciniis linearibus vel lineari-oblongis 1–1.5 mm. longis obtusis vel acutis erectis; corolla ut videtur violacea extus pilis longis albidis villosopilosa, tubo 5 mm. longo superne dilatato fauce 2 mm. lato, lobis 4 oblongis patentibus 2.5 mm. longis obtusis intus glabris; bacca immatura globosa 3 mm. longa sparse villosa.—Brazil: Vicinity of Macieras, Mt. Itatiaya, Estação Biológica, State of Rio de Janeiro, alt. 2,000 m., December 10, 1928, *Lyman B. Smith 1464* (Gray Herb., type).

In the genus *Coccocypselum* the flowers normally are capitate, but there is known one other species with solitary flowers, *C. uniflorum* Hassler, described from the Sierra de Amambay, Paraguay. In that species, however, the leaves are cordate and the lobes of the corolla are twice as long as the tube.

Coccocypselum glabrifolium, sp. nov.—Herba perennis, caulibus crassiusculis sparse ramosis, vetustioribus subteretibus interdum suffruticosis ochraceis, novellis glabris; stipulae persistentes e vagina brevissima lineari-subulatae, virides, 2–2.5 mm. longae, glabrae; folia petiolata opposita, petiolo crassiusculo 2–7 mm. longo glabro anguste marginato; lamina crassa ut videtur in vivo carnosae, late ovata vel elliptico-ovata, 15–20 mm. longa, 7–12 mm. lata, obtusa, basi acutiuscula vel abrupte breviterque contracta, utrinque glabra, supra viridis, costa non elevata, nervis fere occultis, subtus paullo pallidior, in sicco lutescens vel brunnescens, costa crassiuscula elevata, nervis lateralibus utroque latere 5–6, angulo acutissimo adscendentibus, subcurvis, prominulis, nervulis obsoletis; inflorescentiae terminales et ex axillis supremis nascentes, capitatae, dense multiflorae, 1.5–2.5 cm. longe pedunculatae, pedunculo gracili glabro, floribus sessilibus confertis, bracteis carnosis linearibus vel anguste oblongis 6–9 mm. longis acutis viridibus glabris, interioribus brevioribus; hypanthium obovoideum glabrum; calyx 4-partitus, laciniis linearibus 4–5 mm. longis viridibus glabris; corolla caerulea extus glabra, tubo crasso supra paullo dilatato c. 10 mm. longo, ore 3 mm. lato, lobis 4 ovato-oblongis 3.5–4 mm. longis acutis patentibus; antherae semiexsertae;

bacca subglobosa glabra 5–6 mm. longa “subinflata, caerulea.”—Brazil: “In saxosis montis as furnas” (locality not satisfactorily legible), Province of São Paulo, March, 1826, No. 346 (name of collector uncertain, not given on the label; type in the Leningrad Herbarium).

The plant is quite distinct from all the *Coccocypselum* species recorded from Brazil, being easily recognized by the complete absence of pubescence.

Coccocypselum Condalia Pers. Syn. Pl. 1: 132. 1805.

No specimens of this species from Colombia had been seen when the list of the Rubiaceae of that country was prepared. The following specimen has come to hand recently: Colombia: Sucre, Territorio del Caquetá, August, 1926, *S. Juzepczuk 6509* (Leningrad Herb.).

Pentagonia Woronovii, sp. nov.—Ramuli in sicco fere 1 cm. crassi fusco-brunnei glabri vel ad nodos sparse sericeo-strigosi, internodiis brevibus; stipulae caducae lineari-lanceolatae 3–4 cm. longae longe attenuatae extus sparse sericeo-strigosae; folia petiolata opposita, petiolo gracili 5–8 cm. longo subtereti sparse griseo-sericeo; lamina crasse membranacea oblongo-elliptica vel obovato-oblonga, interdum obovato-elliptica, 29–50 cm. longa, 10–21 cm. lata, acuta vel breviter acuminata, basin versus angustata, basi ipsa acuta vel acutiuscula, integra, supra laete viridis, glabra, costa nervisque vix elevatis, subtus pallidior, sparse piloso-sericea et ad nervos dense adpresso-pilosa, costa gracili elevata, nervis lateralibus utroque latere c. 22, angulo acuto adscendentibus, rectis, gracilibus, prominentibus, latere exteriori ramulos breves 1 vel 2 emittentibus, pagina inter nervos pulchre lineolata; inflorescentiae axillares cymosae, cymis brevissime pedunculatis dense multifloris petiolo brevioribus, pedicellis usque ad 2 mm. longis breviter sericeis, bracteis deciduis; hypanthium 4–5 mm. longum oblongum densissime sericeum; calycis limbus 2–2.5 cm. longus in alabastro clausus, longe attenuatus, in anthesi uno latere fissus, extus dense griseo-sericeus; corolla extus glabra, tubo 2.5 cm. longo 7 mm. crasso, lobis 5 late ovatis 6–7 mm. longis acutis; bacca globoso-ovoidea 2–2.5 cm. longa et fere 2 cm. lata, calyce persistente coronata, sparse puberula, lenticellis magnis elevatis brunneis conspersa.—Colombia: Hetuchá ad Río Orteguaza, Quebrada de Hetuchá, Territorio del Caquetá, July 20, 1926, *G. Woronow and S. Juzepczuk 6079* (Herb. Field Mus. No. 605,667, type; duplicate in Leningrad Herb.). Florencia, Territorio del Caquetá, July 13, 1926, *Woronow & Juzepczuk 5941* (Field Mus., Leningrad Herb.).

Related, evidently, to *P. perumana* Standl., which has similar leaves and flowers. In that species, however, the petioles are much shorter, the stipules larger, and the lateral veins of the leaves less numerous.

Pentagonia peruviana Standl. Field Mus. Bot. 4: 326. 1929.

In publishing this species, its country, through some oversight, was given as "Peru." The Río Pastasa, however, lies in a region which usually is admitted to be a part of Ecuador. The specific name is, therefore, markedly inappropriate, but there is apparently no authority for changing it to some more fitting one.

Pentagonia Williamsii, sp. nov. Frutex; folia brevissime petiolata, petiolo c. 3 cm. longo crasso dense breviterque hirsuto; lamina crasse papyracea anguste oblongo-oblancoolata, 81 cm. longa et ultra, 16–18 cm. lata, longiuscule acuminata, versus basin longissime sensimque attenuata, supra viridis, glabra, costa nervisque non elevatis, sublucida, subtus in sicco brunnescens, ubique dense molliterque pilis patentibus pilosa, costa crassa elevata, nervis lateralibus utroque latere c. 32, angulo latiusculo adscendentibus, fere rectis, gracilibus, prominentibus, marginem fere attingentibus, latere inferiore prope marginem ramulos 1 vel 2 breves emittentibus, pagina inter nervos crebre lineolata; flores in axillis dense cymoso-congesti, inflorescentiis sessilibus, floribus sessilibus numerosis, bracteis late oblongis 1.5–2 cm. longis acutis vel obtusiusculis in sicco ferrugineis versus basin sparse pilosis vel glabratis striolatis; hypanthium 4 mm. longum oblongum dense adpresso-pilosum; calyx 18–20 mm. longus ad medium bilobus, segmentis oblongis obtusis, extus sparse pilosus vel fere glaber; corolla extus glabra, tubo 25–32 mm. longo 4 mm. crasso, lobis 5 patentibus 4–5 mm. longis late ovatis acutis.—Peru: Pebas, on the Amazon River, Dept. Loreto, July 30, 1929, *Llewellyn Williams* 1949 (Herb. Field Mus. No. 604,516, type).

The species is a strikingly distinct one, well marked by the very long and narrow leaves with dense, soft, spreading pubescence.

Hoffmannia villosula, sp. nov.—Suffrutex 60–100 cm. altus ut videtur simplex, caulibus crassiusculis obtuse tetragonis viridibus, novellis sparse villosulis, internodiis plerumque 1.5–2.5 cm. longis; folia longiuscule petiolata opposita, petiolo crassiusculo 1.2–3 cm. longo sparse villosulo; stipulae breves triangulares caducae c. 2 mm. longae; lamina membranacea elliptico-oblonga vel late oblongo-lanceolata, 9–15.5 cm. longa, 4–6 cm. lata, longe acuminata, basin versus longe sensimque angustata, supra laete viridis, sparsissime pilis longis debilibus ut videtur patentibus villosa, costa venisque vix prominulis, subtus pallida, praesertim ad venas villosula, ubique dense raphidibus brevibus parvis pallidis conspersa, costa crassiuscula, venis utroque latere c. 10, angulo lato adscendentibus, arcuatis, prominulis, gracillimis, juxta marginem anastomosantibus; flores subumbellati e nodis defoliatis infra folia nascentes, umbellis 2–3-floris 3–9 mm. longe pedunculatis solitariis, pedicellis gracilibus 4–5 mm. longis in statu fructifero glabris; calyx 4-partitus, laciniis 1.2 mm. longis ad apicem baccae persistentibus, lineari-attenuatis erectis villosulo-ciliatis; bacca rosea vel rubra ovalis 6–7 mm. longa basi

rotundata glabra; semina minuta grosse foveolata fusco-ferruginea.—Peru: In dense forest, Schunke Hacienda above San Ramón, Dept. Junín, alt. 1,400–1,700 m., June 8–12, 1909, *E. P. Killip and A. C. Smith 24817* (Herb. Field Mus. No. 607,888, type); also *No. 24544* (U. S. Nat. Herb.).

Conspicuously different from the few other species known from Peru, but closely related to *H. viridis* Rusby, of northwestern Colombia, which has glabrous leaves.

Posoqueria huilensis, sp. nov.—Glabra; ramuli crassi subteretes, internodiis elongatis; stipulae subpersistentes 1.5–2 cm. longae, late ovatae vel rotundatae, erectae, apice rotundatae; folia breviter petiolata opposita, petiolo crasso 1–1.5 cm. longo supra sulcato; lamina crasse membranacea vel papyracea fere orbicularis vel late elliptica (folia minora interdum elliptica, c. 12 cm. longa et 7.5 cm. lata), 23–26 cm. longa, 16–22 cm. lata, apice late rotundata et interdum brevissime obtuseque protracta, basi late rotundata vel obtusa, supra laete viridis, lucida, costa nervisque vix elevatis, subtus paullo pallidior, costa crassiuscula prominente, nervis lateralibus utroque latere c. 9, angulo acuto adscendentibus, gracilibus, prominentibus, arcuatis, prope marginem conjunctis, nervulis obscuris; flores perfecti non visi; corolla extus glabra; tubo gracili 10–11.5 cm. longo 4 mm. crasso, lobis late oblongis patentibus obtusis inaequalibus 2–2.5 cm. longis intus prope basin dense villosis; filamenta c. 1 cm. longe exserta, antheris anguste oblongis 8 mm. longis acutis vel acuminatis.—Colombia: La Resina, Departamento de Huila, August 21, 1926, *S. Juzepczuk 6578* (Herb. Field Mus. No. 605,651, type; duplicate in Leningrad Herbarium).

In the shape and size of its leaves this species is much like *P. maxima* Standl., described recently from Colombia, but in that the corolla tube is 29 cm. long, and the lobes 4–4.5 cm. in length.

Amaioua ursina, sp. nov.—Frutex vel arbuscula usque ad 5 m. alta, ramulis crassis obtuse tetragonis dense fulvo-hirsutis, internodiis brevibus vel elongatis; stipulae tenues deciduae dense hirsutae 1 cm. longae et ultra; folia breviter petiolata opposita, petiolo crasso 4–16 mm. longo hirsuto; lamina coriacea ovali-elliptica, elliptico-oblonga vel oblongo-obovata, 14–26 cm. longa, 6–13 cm. lata, apice obtusa vel rotundata et brevissime caudato-acuminata, acumine c. 7 mm. longo obtuso, basi acuta vel basin versus sensim angustata, supra in sicco brunnescens, lucida, sparse praesertim ad venas hispido-hirsuta, costa venisque prominentibus, subtus fere concolor, ubique vel tantum ad venas hirsuta, costa gracili elevata, nervis lateralibus utroque latere c. 13 obliquis, angulo semirecto abeuntibus, gracilibus, elevatis, fere rectis, juxta marginem obscure conjunctis, venulis tenerrimis inconspicuis subparallelis; flores masculi ad apices ramorum dense umbellati numerosi brevissime pedicellati, pedicellis dense

hispidis; calyx campanulatus 4 mm. longus et aequilatus dense minuteque sericeus versus basin hispidulus truncatus; corolla alba, tubo crassiusculo 8-10 mm. longo extus dense retrorso-sericeo ore subconstricto, lobis lanceolato-oblongis 7-8 mm. longis subacutis extus dense tomentellis intus glabris.—British Guiana: Kamakusa, upper Mazaruni River, July 11-22, 1923, *J. S. De La Cruz* 4169 (Herb. Field Mus. No. 544,753, type). Waini River, Northwest District, April, 1923, *De La Cruz* 3800.

From *A. guianensis* Aubl. and *A. corymbosa* HBK., both of which occur in British Guiana, the present plant is easily distinguished by its coarse, widely spreading pubescence. *A. pilosa* Schum., which has somewhat similar pubescence on the branches, has small leaves and an altogether different calyx.

***Randia Williamsii*, sp. nov.**—Frutex, ramulis novellis subcompressis dense pilis brevibus subadpressis ochraceis vel cinereis hispidulis, internodiis brevibus; stipulae erectae persistentes triangulari-ovatae 7 mm. longae subulato-acuminatae; folia breviter petiolata opposita, petiolo crassiusculo 4-9 mm. longo adpresso-hispidulo; lamina membranacea anguste oblonga vel lanceolato-oblonga 11-23 cm. longa, 4-6 cm. lata, longe sensimque acuminata, basi acuta, supra in sicco cinereo-viridis vel subfusca, glabra, costa venisque planis, subtus fere concolor, pilis brevibus rigidulis patentibus vel subadpressis sparse pilosa, costa gracili elevata, nervis lateralibus utroque latere c. 13 obliquis, angulo semirecto vel latiore abeuntibus, gracilibus, prominentibus, arcuatis, prope marginem conjunctis, nervulis inconspicuis; flores terminales solitarii sessiles; hypanthium cylindraceum 8 mm. longum ut calyx dense adpresso-hispidum, calycis tubo cylindraceo 1 cm. longo, laciniis 5 filiformibus 1.5 cm. longis erectis; corolla alba, tubo gracillimo 20-23 cm. longo 4 mm. crasso extus glabro supra vix dilatato, laciniis lineari-lanceolatis c. 6.5 cm. longis et 1 cm. latis extus sparse adpresso-pilosulis intus glabris longissime et anguste attenuatis; styli rami breviter exserti crassi; bacca oblongo-ovalis 5 cm. longa, 2.5 cm. lata, 2-locularis, basi et apice rotundata, glabrata, fere laevis.—Peru: In forest, La Victoria on the Amazon River, Dept. Loreto, August 19, 1929, *Llewelyn Williams* 2538 (Herb. Field Mus. 604,483, type), 2531.

This plant might be referred to *R. formosa* (Jacq.) Schum. var. *longiflora* Schum., which was based upon Peruvian material. In that, however, the corolla is densely pilose outside, and the leaves are much smaller and relatively broader. The present plant can scarcely be considered a mere variant of *R. formosa*, for it differs greatly from the usual forms of that species in its much elongate and narrow leaves and in its extraordinarily elongate corolla. It is probable that var. *longiflora* also deserves specific rank.

Randia Killipii, sp. nov.—Frutex vel arbor 2.5–9 m. alta inermis, ramulis gracilibus, vetustioribus ferrugineis rimosis, novellis densissime pilis brevibus cinereis adscendentibus pilosis, internodiis abbreviatis vel elongatis; stipulae persistentes erectae ovato-triangulares vel lanceolato-triangulares 5–10 mm. longae longe attenuato-acuminatae extus dense adpresso-pilosae; folia breviter petiolata opposita, petiolo gracili 1–1.5 cm. longo dense velutino-piloso; lamina membranacea elliptica, late elliptica, vel obovato-elliptica, 11–14 cm. longa, 6–7 cm. lata, abrupte acuta vel breviter acuminata, acumine apice obtuso vel rotundato, basi acuta vel obtusa, supra in sicco fusco-viridis, dense asperulo-puberula, costa venisque vix prominulis, subtus fere concolor, ubique dense asperulo-puberula vel velutino-pilosula, costa gracili elevata, nervis lateralibus utroque latere c. 10 obliquis, angulo latiusculo abeuntibus, gracillimis, prominentibus, arcuatis, prope marginem conjunctis, nervulis inconspicuis laxe reticulatis; flores masculi ad apices ramorum pauci capitati sessiles; hypanthium 1.5 mm. longum late turbinatum ut calyx dense sericeum, calyce late campanulato truncato 1.5 mm. longo; corolla alba extus subdense puberula vel hirtella, tubo 3 cm. longo 4–5 mm. lato intus glabro fauce subconstricto, laciniis anguste lanceolato-oblongis 3.5 cm. longis 1 cm. latis acuminatis intus glabris; antherae lineares 7 mm. longae 1 cm. supra basin tubi insertae; bacca globosa 2.5 cm. diam. laevis glabrata 4-locularis, seminibus paucis magnis angulatis c. 8 mm. diam.—Peru: In dense forest, San Antonio, on Rio Itaya, Dept. Loreto, alt. 110 m., September 18, 1929, *E. P. Killip and A. C. Smith 29495* (Herb. Field Mus. No. 607,593, type). Pichis Trail, Eneñas, Dept. Junín, alt. 1,600–1,900 m., in dense forest, *Killip & Smith 25643*. Soledad, on Rio Itaya, Dept. Loreto, 110 m., in dense forest, *Killip & Smith 29716*.

A well-marked species of doubtful relationship.

Alibertia stenantha, sp. nov.—Frutex, ramulis gracilibus subteretibus glabris, novellis interdum subcompressis, internodiis plerumque elongatis; stipulae erectae persistentes lanceolato-triangulares 7–8 mm. longae glabrae subulato-attenuatae; folia breviter petiolata opposita, petiolo gracili glabro supra sulcato 1–1.8 cm. longo; lamina membranacea oblongo-elliptica vel elliptica 15–23 cm. longa, 5.5–10 cm. lata, abrupte caudato-acuminata, acumine angusto longe attenuato saepe 2–3 cm. longo, basi acuta vel interdum rotundata et abrupte breviterque decurrens, supra fusco-viridis, glabra, costa venisque prominulis, subtus concolor, in axillis costarum secundariorum breviter albo-barbata, aliter glabra, costa gracili elevata, nervis lateralibus utroque latere c. 9 obliquis, angulo fere semirecto abeuntibus, tenerrimis, prominentibus, leviter arcuatis, prope marginem conjunctis, nervulis prominulis laxe reticulatis; inflorescentiae masculae terminales cymosae sessiles congestae multiflorae petiolum vix aequantes, ramis brevibus puberulis, bracteis minutis subulatis pallidis pubescentibus, floribus breviter pedicellatis; hypanthium turbinatum 1 mm. longum ut calyx sparse minuteque puberulum vel

fere glabrum, calyce late campanulato 1–1.5 mm. longo, laciniis lineari-subulatis 1–1.5 mm. longis suberectis; corolla extus glabra, tubo anguste cylindraceo 7–8 mm. longo fauce dense barbato, supra non dilatato, laciniis 5 patentibus lineari-subulatis revolutis angustissime attenuatis tubo aequilongis intus glabris; flores feminei terminales solitarii 0.5–2 cm. longe pedicellati; calyce truncato, laciniis remotis subulatis 1 mm. longis, corolla in alabastro 11 mm. longa extus glabra, tubo ut videtur fere nullo, laciniis longissime attenuatis; bacca globosa glabra 1.5–2 cm. diam.—Peru: La Victoria on the Amazon River, in forest, September 5, 1929, *Llewelyn Williams 3117* (Herb. Field Mus. No. 604,442, type), *2941, 3116, 2833*. Leticia, on the Amazon River, Dept. Loreto, in forest, *Williams 3168, 3163, 3154*. In forest, Caballo Cocha, on the Amazon River, Dept. Loreto, *Williams 2225*.

Malanea sarmentosa Aubl. Pl. Guian. 1: 106. pl. 41. 1775.

This species of the Guianas is not reported from Brazil in the *Flora Brasiliensis*, but the following collection seems to be identical with material from French and British Guiana: Brazil: Belem, State of Pará, in 1929, *B. E. Dahlgren & E. Sella 728*.

Appunia guatemalensis Donn. Smith. This lone representative of a genus otherwise confined to northern South America seems to be rare in Guatemala, from which it was described. A recent collection shows that its range extends to British Honduras: Stann Creek Railway, in open swampy forest, a shrub a meter high, the stem 3.5 cm. in diameter, flowers white, fruit black, December, 1929, *W. A. Schipp S65*.

Guettarda ferox, sp. nov.—Rami obtuse quadrangulares crassi cinerei vel ochracei, ad nodos spinis 2 crassis abrupte recurvis 2–3 cm. longis basi incrassatis armati, ramulis novellis crassiusculis dense pilis brevibus brunnescentibus patentibus velutino-pilosis, internodiis brevibus; stipulae deciduae suberectae ovatae c. 8 mm. longae acuminatae extus dense velutino-pilosae; folia breviter petiolata opposita, petiolo crasso 6–10 mm. longo dense pilosulo; lamina crasse membranacea oblonga vel elliptico-oblonga 10–15 cm. longa, 4–6.5 cm. lata, abrupte breviterque acuminata, acumine triangulari obtuso, basi obtusa vel anguste rotundata, basi ipsa interdum brevissime cordata, supra in sicco fusco-viridis, glabrata, ad costam puberula, sublucida, costa venisque prominulis, subtus paullo pallidior, mollis, ubique dense pilis longiusculis subadpressis fulvis rigidiusculis pilosa, costa gracili elevata, nervis lateralibus utroque latere c. 10 obliquis, angulo angusto valde adscendentibus, arcuatis, prominentibus, gracilibus, venulis transversis crebris prominulis subparallelis; inflorescentiae axillares solitariae cymosae dense pauciflorae 1.5–2.2 cm. longe pedunculatae, cymis subcapitatis vel breviter furcatis, ramis vix 5 mm. longis densissime pilosulis; drupae ovaes vel late oblongae

15–18 mm. longae, c. 1 cm. latae, densissime brunneo-tomentosae, 4-loculares; calyx ad apicem drupae persistens tubulosus truncatus 3–4 mm. longus dense adpresso-pilosus.—Peru: In forest, Pinto Cocha on the Río Nanay, Dept. Loreto, June 16, 1929, *Llewellyn Williams* 808 (Herb. Field Mus. No. 604,671, type).

This appears to be a quite distinct species, not closely similar to any other known from Peru. The large, abruptly deflexed spines probably indicate that the plant is scandent in habit.

***Guettarda pichisensis*, sp. nov.**—Frutex 3–3.5 m. altus, ramulis gracilibus teretibus ubique dense griseo-sericeis, internodiis valde elongatis; stipulae mox deciduae tenues sordide brunnescentes 15–20 mm. longae oblongae erectae acutae extus praesertim basi ad costam strigoso-sericeae, petiolis multo breviores; folia longe petiolata opposita, petiolo gracillimo 1.5–5.5 cm. longo dense sericeo; lamina membranacea ovata, elliptico-oblonga vel lanceolato-oblonga, 16–25 cm. longa, 6–11 cm. lata, longe acuminata, acumine angusto longe attenuato interdum subfalcato, basin versus longissime sensimque attenuata, supra viridis, densiuscule strigilloso-sericea vel serius glabrata, costa venisque prominulis, subtus pallidior, ubique pilis brevibus griseis sericea, costa gracili elevata, nervis lateralibus utroque latere c. 12–16 obliquis, angulo angusto valde adscendentibus, gracillimis, arcuatis, prominentibus, prope marginem conjunctis, venulis crebris transversis subparallelis; inflorescentiae axillares et e nodis defoliatis nascentes, solitariae, furcatae, petiolis multo breviores, 7–12 mm. longe pedunculatae, ramis 2 gracilibus dense minuteque sericeis 1–2 cm. longis, rare furcatis, dense 5–7-floris, bracteis deciduis, floribus secundis arcte sessilibus; drupae late oblongae 5–6 mm. longae et 3–4 mm. latae, densissime et minutissime ochraceo-sericeae, acute 4-angulatae, basi late rotundatae, apice subtruncatae et calyce minuto persistente truncato coronatae, 4-loculares.—In dense forest, Pichis Trail between San Nicolás and Azupuzú, Dept. Junín, alt. 650–900 m., July 6, 1929, *E. P. Killip* and *A. C. Smith* 26104 (Herb. Field Mus. No. 607,605, type).

In most characters this plant agrees with the descriptions of *G. dependens* (R. & P.) DC. and *G. ochreatea* Schlecht., both of which were described from Peru. I have seen no material certainly referable to either of these species, in which the petioles are described as being very short. The species are described as differing also in various minor characters, and it seems necessary, for the present at least, to consider the plant here described as representing a different species.

***Chomelia unguis-cati*, sp. nov.**—Frutex vel arbor, ramulis crassis, vetustioribus fusco-ferrugineis ad nodos spinis 2 divaricatis gracilibus 1.5 cm. longis interdum munitis, novellis ferrugineis vel brunneis dense pilis fulvis rigidiusculis adpresso-pilosis, internodiis abbreviatis; stipulae triangulares caducae 6–7 mm. longae subulato-acuminatae ferrugineae dorso adpresso-pilosae; folia breviter petio-

lata opposita, petiolo 10–18 mm. longo dense strigoso vel glabrato gracili; lamina subcoriacea ovato-oblonga vel elliptico-oblonga 7.5–19 cm. longa, 3–5.5 cm. lata, acuta vel acuminata, basin versus breviter angustata, interdum abrupte contracta et breviter decurrens, supra glabra vel ad costam puberula, lucida, costa venisque prominulis, venulis subimpressis, subtus vix pallidior, ad costam venasque strigosa vel glabrata, aliter glabra, costa gracili valde elevata, nervis lateralibus utroque latere c. 4 angulo acuto valde adscendentibus, gracilibus, elevatis, fere rectis, juxta marginem conjunctis, venulis transversis creberrimis subimpressis subparallelis; inflorescentiae axillares solitariae dense cymosae, cymis fere capituliformibus paucifloris 5 cm. longe pedunculatis, pedunculis rigidis dense ochraceo-strigosis, bracteis numerosis persistentibus subulatis vel linearibus plerumque 5–7 mm. longis sparse strigosis, floribus sessilibus vel brevissime pedicellatis; drupae anguste oblongae 17–22 mm. longae, c. 6 mm. latae, adpresse fulvo-pilosae, basi et apice obtusae, biloculares; calyx ad apicem baccae persistens 6–7 mm. longus extus strigosus, laciniis 4 rigidis lineari-attenuatis erectis tubo duplo longioribus.—Peru: Timbuchi, on the Río Nanay, Dept. Loreto, June 26, 1929, *Llewellyn Williams* 991 (Herb. Field Mus. No. 604,689, type).—Bolivia: Junction of the rivers Beni and Madre de Dios, August, 1886, *Rusby* 1878.

Called “garras de gato” and “anzuelo casha” in Peru.

Ixora escalerae, sp. nov.—Frutex vel arbuscula 2–5-metralis, ramulis gracilibus obtuse tetragonis subdense strigillosis, internodiis 2.5–3 cm. longis; stipulae erectae persistentes 4–5 mm. longae e basi brevi triangulari lineari-subulatae strigillosae; folia breviter petiolata opposita, petiolo gracili 1–1.5 cm. longo dense fulvo-strigilloso; lamina firme membranacea oblongo-elliptica vel lanceolato-oblonga 10–18 cm. longa, 4–7 cm. lata, acuminata, basi acuta vel acutiuscula, supra viridis, ad costam prominulam et ad venas non elevatas adpresso-hispidula, aliter glabra vel glabrata, subtus paullo pallidior, ad costam gracilem elevatam et ad venas sparse strigillosa, aliter glabra vel glabrata, nervis lateralibus utroque latere c. 12 gracillimis obliquis, angulo lato adscendentibus, infimis interdum perpendicularibus, subarcuatis vel fere rectis, prope marginem conjunctis, venulis tenuibus prominentibus laxe reticulatis; inflorescentia terminalis laxe ovoideo-paniculata, c. 9 cm. longa et 7 cm. lata, 2.5 cm. longe pedunculata, multiflora, basi trichotoma, ramulis gracilibus adscendentibus minute fulvo-strigillosis, bracteis subulatis extus strigillosis 1–2 mm. longis, floribus cymosis, pedicellis gracilibus rectis 3–5 mm. longis minute puberulis vel strigillosis; hypanthium late obovoideum 1.5 mm. longum basi angustatum sparsissime et minute puberulum vel fere glabrum, calyce subtruncato fere 1 mm. longo, remote et minute 5-denticulato; corolla alba extus minute pulverulacea in alabastro late obtusa, tubo gracili 7–8 mm. longo, 1 mm. lato, lobis 5 oblongis obtusis 4 mm. longis patentibus; antherae inclusae.—Peru: Cerro de la Escalera, Dept. Loreto, alt. 1,200 m., February, 1903, *E. Ule* 6778 (Herb. Berol., type).

***Ixora Killipii*, sp. nov.**—Arbor 3.5–5.5 m. alta, ramulis vetustioribus teretibus ochraceis rimosis, novellis gracilibus in sicco fuscis, internodiis c. 3–4 cm. longis glabris; stipulae erectae persistentes in vaginam 1.5–2 mm. longam glabram connatae, lobis brevibus late rotundatis in mucronem 2.5–3 mm. longum desinentibus; folia subsessilia opposita, petiolo crasso vix 2 mm. longo; lamina firme membranacea oblongo-elliptica 8.5–15 cm. longa, 4–7 cm. lata, abrupte acuminata, acumine anguste triangulari cuspidato, basin versus breviter angustata, basi ipsa obtusa vel anguste rotundata, glabra, in sicco fusca, supra lucidula, costa venisque prominulis, venulis quoque prominulis et reticulatis, costa subtus elevata gracili, nervis lateralibus utroque latere c. 9 gracilibus prominulis, angulo lato divergentibus, infimis interdum angulo angusto adscendentibus, leviter curvis, prope marginem conjunctis, venulis prominulis arcte reticulatis; inflorescentia terminalis cymoso-paniculata laxa pauciflora 1–2.5 cm. longe pedunculata foliis multo brevior (perfecta non visa), basi foliis 2 reductis fulcrata, ramis gracilibus teretibus rigidis, floribus in cymulas plerumque trifloras laxas dispositis, bracteis minutis subulatis, pedicellis c. 7 mm. longis; hypanthium glabrum obovoideum 2.5 mm. longum, calyce 2 mm. longo ad medium 4-fido, lobis triangularibus acuminatis; corolla viridi-alba extus glabra, tubo gracillimo 2.5 cm. longo 1 mm. crasso, lobis 4 lineari-lanceolatis acutis vel acuminatis intus glabris patentibus vel recurvis 1.5 cm. longis; antherae subexsertae 3 mm. longae anguste oblongae.—Peru: In dense forest, Pichis Trail, Santa Rosa, Dept. Junín, alt. 625–900 m., July 6–7, 1929, *E. P. Killip and A. C. Smith 26148* (U. S. Nat. Herb., type).

Killip & Smith 27643, from Yurimaguas, Dept. Loreto, at 135 m., is probably conspecific. It is in fruit only, and in poor condition. The collectors describe it as a shrub of 3–3.5 m. with black fruit.

***Coussarea Duckei*, sp. nov.**—Frutex 2–3-metralis, ramulis teretibus laevibus pallidis glabris, internodiis elongatis; stipulae deciduae, non visae; folia arcte sessilia opposita subcoriacea glabra ovata vel ovato-oblonga 10–17 cm. longa, 4.5–7.5 cm. lata, abrupte longiacuminata, acumine angusto longe attenuato, basi cordata, lobis basalibus late rotundatis, supra luteo-viridis, costa venisque prominentibus, subtus pallidior, costa gracili vel crassiuscula elevata, nervis lateralibus utroque latere c. 10 pallidis, angulo fere recto patentibus, inaequalibus, prominentibus, gracilibus, fere rectis, remote a margine conjunctis, nervulis prominulis pallidis laxe reticulatis; inflorescentia terminalis 3 cm. longe pedunculata, breviter spiciformis, corollis exclusis 1.5 cm. longa et 1 cm. lata, densissime multiflora, bracteis obsoletis, floribus secus spicam dense fasciculatis sessilibus; hypanthium late turbinatum 1.5 mm. longum minutissime puberulum, calyce campanulato 0.8 mm. longo truncato; corolla alba extus minute puberula in alabastro 22 mm. longa apice obtusa, tubo gracillimo superne sensim dilatato in fauce c. 2 mm. lato, lobis oblongis obtusis 5–6 mm. longis.—Brazil: Insula Goyana sub cataractam infimam Río

Tapajoz, State of Pará, in forests which are scarcely or seldom flooded, October 16, 1922, *A. Ducke 18846* (Herb. Berol., type).

The plant is of striking appearance because of its large, sessile, heart-shaped leaves. The short spicate inflorescence also is distinctive. The species does not seem to have a close resemblance to any other listed for Brazil.

Coussarea Urbaniana, sp. nov.—Glabra, ramulis crassis subteretibus olivaceis, internodiis 2–5 cm. longis; stipulae deciduae (perfectae non visae) 1.5 cm. longae et ultra; folia breviter petiolata opposita, petiolo crassiusculo 7–15 mm. longo; lamina subcoriacea elliptica vel late elliptica 11–17 cm. longa, 4–9.5 cm. lata, abrupte acuminata, acumine triangulari anguste attenuato c. 2 cm. longo, basi acuta, supra sublucida, costa venisque prominulis, subtus paullo pallidior, costa gracili elevata, nervis lateralibus utroque latere c. 10 angulo lato abeuntibus, pallidis, gracilibus, prominentibus, leviter curvis vel fere rectis, prope marginem arcuato-conjunctis, nervulis prominulis laxe reticulatis; flores in cymulas dispositi, sessiles vel breviter pedicellati, pedicellis crassis; baccae oblongo-ellipsoideae c. 12 mm. longae et 6 mm. latae laeves basi et apice obtusae, calyce persistente 1 mm. longo subtruncato.—Cuba: Prov. Oriente, Baracoa ad El Yunque in pinetis, November 20, 1914, *E. L. Ekman 3547* (Herb. Field Mus. No. 604,902, type).

The available specimen is in poor condition for study, consisting of a leafy branch with only a detached portion of an inflorescence. There is no doubt, however, that the plant represented belongs to the genus *Coussarea*, a group which has not been reported previously from the West Indies except from the islands lying close to the South American coast.

Coussarea hirticalyx, sp. nov.—Frutex vel arbor 3–7.5 m. alta, ramulis crassis, vetustioribus obtuse tetragonis ochraceis rimosis, novellis fuscis glabris; stipulae caducae, non visae; folia petiolata opposita, petiolo gracili 1.5–2.5 cm. longo supra leviter sulcato dense hispidulo-ciliato; lamina membranacea vel firme membranacea late elliptica vel elliptico-oblonga 14–20 cm. longa, 6–9.5 cm. lata, apice obtusa vel acutiuscula et abrupte caudato-acuminata, acumine 1–2.5 cm. longo angusto saepe fere lineari acuto, basi acuta vel obtusa, supra in sicco fusca, sublucida, ad costam minute hirtella vel fere omnino glabra, costa venisque non elevatis, subtus paullo pallidior, ad costam venasque sparse hispidula, aliter glabra, costa gracili elevata, nervis lateralibus utroque latere c. 10 obliquis, angulo lato vel angusto adscendentibus, gracillimis, prominentibus, leviter arcuatis vel fere rectis, juxta marginem conjunctis; inflorescentia terminalis ovoideo-paniculata 6–9 cm. longa et 5–9 cm. lata, 2–5.5 cm. longe pedunculata, laxa multiflora, ramis crassis compressis minute sericeis vel glabratis, ramis basalibus oppositis vel ternatis 1.5–2.5

cm. longis divaricatis, cymis densis, cymulis densis 6–8-floris et ultra, floribus sessilibus vel brevissime crasseque pedicellatis; hypanthium oblongum c. 2 mm. longum densissime ochraceo-sericeum, calyce tubuloso 2–2.8 mm. longo truncato vel obsolete repando-denticulato sparse praesertim prope orem hispidulo; corolla alba extus minutissime denseque puberula, tubo filiformi 2 cm. longo superne vix dilatato ore 1.6 mm. lato, lobis 4 oblongo-linearibus 5–6 mm. longis patentibus obtusis; stylus filiformis saepe breviter exsertus supra sparse furfuraceo-puberulus, ramis brevibus gracillimis.—Peru: La Victoria, on the Amazon River, Dept. Loreto, in forest, August 19, 1929, *Llewelyn Williams* 2528 (Herb. Field Mus. No. 604,476, type). Caballo Cocha, on the Amazon, Dept. Loreto, August, 1929, in forest, *Williams* 2504, 2406. Iquitos, Dept. Loreto, 100 m., in woods, August, 1929, *Killip & Smith* 27191, 27198.

Related to *C. tenuiflora* Standl., also Peruvian, but that species lacks the conspicuous spreading setulose hairs present on the calyx of *C. hirticalyx*.

Faramea grandifolia, sp. nov.—Glabra; ramuli validi ad nodos c. 1 cm. crassi olivacei in sicco plus minusve compressi, internodiis elongatis; folia maxima breviter petiolata opposita, petiolo crasso 1.5–2 cm. longa supra breviter sulcato; lamina crasse membranacea ovalis vel elliptico-oblonga, 23–28 cm. longa, 10–13 cm. lata, apice obtusa vel rotundata et abrupte breviterque acuminata, acumine triangulari acuminato, basi obtusa vel rotundata, supra laete viridis, subluccida, nervis nervulisque prominulis, subtus paullo pallidior, costa crassiuscula elevata, nervis lateralibus utroque latere c. 19, gracillimis, prominentibus, angulo fere recto abeuntibus, leviter curvis, in nervum marginalem conjunctis, nervis aliis paullo tenuioribus parallelis interjectis, nervulis ultimis prominulis laxè reticulatis; stipulae deciduae, non visae; inflorescentia terminalis cymosocorymbosa e basi trichotoma c. 4.5 cm. longe pedunculata laxè pauciflora, pedicellis plerumque in statu fructifero 2–4 mm. longis; fructus transverse ovalis fere laevis, c. 1.5 cm. latus et fere 1 cm. altus, apice subtruncatus; semen 1 cm. longum nigrescens facie inferiori profunde angustè sulcatum.—Colombia: Sucre, Territorio del Caquetá, July 10, 1926, *G. Woronow and S. Juzepczuk* 5882 (Herb. Field Mus. No. 605,665, type; duplicate in Leningrad Herbarium).

This species has much larger leaves than any other member of the genus with which I am familiar.

Faramea quinqueflora Poepp. & Endl. Nov. Gen. & Sp. 3: 28. pl. 234. 1845. *Coussarea bryoxenos* Schum. & Krause, Verh. Bot. Ver. Brandenb. 50: 116. 1908.

I have seen photographs of both the types on which these names are based, and they evidently relate to the same plant. It seems to be a common species of the upper Amazon Valley.

This widely ranging South American species has not been reported to range as far northward as Colombia, but a specimen recently received for determination, although not in the best of condition for study, seems referable to *F. quinqueflora*: Colombia: Montañita, on Río Ortega, Territorio del Caquetá, August, 1926, G. Woronow & S. Juzepczuk 6372 (Leningrad Herb.).

***Faramea réctinervia*, sp. nov.**—Arbuscula omnino glabra, ramulis subgracilibus pallide viridibus subteretibus vel in sicco subcompressis, internodiis valde elongatis; stipulae persistentes alte connatae laxae late ovatae 7–9 mm. longae apice late rotundatae et breviter cuspidatae pallide virides; folia breviter petiolata opposita, petiolo 1–1.7 cm. longo crassiusculo; lamina crasse membranacea ovalis vel elliptico-oblonga 15–22 cm. longa, 6.5–11 cm. lata, apice obtusa vel rotundata, rarius acutiuscula et abrupte cuspidata, acumine 1–1.8 cm. longo vulgo oblongo-lineari obtuso, basi obtusa vel fere rotundata, rarius abrupte et brevissime decurrens, supra pallide viridis vel flavescens, costa venisque prominulis, venulis quoque saepe prominulis, subtus fere concolor, costa crassa prominente, nervis lateralibus utroque latere c. 11 angulo latissimo vel saepe recto divergentibus, gracillimis, prominulis, interdum valde irregularibus, leviter curvis vel fere rectis, remote a margine conjunctis, nervulis prominulis laxe reticulatis; inflorescentia terminalis sessilis vel 2.5–4 cm. longe pedunculata, basi trichotoma, 4.5–14 cm. longa et aequilata, laxae multiflora, ramis gracilibus subangulatis laete caeruleis divaricatis vel adscendentibus, floribus subumbellatis vel in cymulas trifloras dispositis, pedicellis valde inaequalibus crassiusculis 1–5 mm. longis, bracteis caducis; hypanthium late turbinatum 1.5–2 mm. longum e pedicello vix distinctum, calyce late companulato 1.5 mm. longo et 3 mm. lato truncato remote et minutissime denticulato; corolla in alabastro 11–13 mm. longa gracilis versus apicem obtusiusculum attenuata, lobis tubo aequilongis; fructus laete caeruleus depresso-globosus 7–10 mm. latus, 5–6 mm. altus, fere laevis, basi late rotundatus, apice fere planus; semen pallidum depressum, subtus in tota longitudine profunde angusteque exsculptum.—Peru: In forest, La Victoria, on the Amazon River, Dept. Loreto, August 30, 1929, *Llewellyn Williams 2962* (Herb. Field Mus. No. 604,446, type). In dense forest, Puerto Bermúdez, Dept. Junín, 375 m., July 14–17, 1929, *Killip & Smith 26418* (U. S. Nat. Herb.), *26582* (U. S. Nat. Herb.).

The species is well marked by the large, broad leaves whose veins are almost or quite perpendicular to the costa.

***Faramea amplifolia*, sp. nov.**—Arbor omnino glabra, ramulis crassiusculis 6–7 mm. crassis in sicco subcompressis, internodiis valde elongatis; stipulae deciduae, non visae; folia breviter petiolata opposita, petiolo crasso 1.5–2 cm. longo; lamina crasse membranacea elliptico-oblonga vel anguste ovalis 22–28 cm. longa, 9.5–13 cm. lata,

apice rotundata et brevissime cuspidata, acumine angusto 5-8 mm. longo obtuso, basi obtusa vel acutiuscula, interdum versus basin breviter angustata, supra laete viridis vel flavescens, saepe lucida, costa venisque pallidis prominulis, subtus multo pallidior, costa crassa elevata, nervis lateralibus pallidis utroque latere c. 12, angulo latissimo divergentibus, gracilibus, prominentibus, leviter arcuatis, juxta marginem conjunctis, nervulis inconspicuis laxe reticulatis; inflorescentia terminalis magna sessilis cymoso-paniculata, 12-14 cm. longa et aequilata, laxa multiflora, basi trichotoma, ramis subgracilibus rigidis adscendentibus subcompressis, pedicellis gracilibus rigidis 2-10 mm. longis, bracteis deciduis; fructus depresso-globosus 8-13 mm. latus et 5-7 mm. altus laevis, calyce brevi persistente truncato coronatus, monospermus; semen depressum fuscum 6 mm. longum, facie inferiore in tota longitudine profunde excavatum.—Peru: In forest, Pebas, on the Amazon River, Dept. Loreto, July 30, 1930, *Llewelyn Williams* 1946 (Herb. Field Mus. No. 604,514, type); July 23, 1929, *Williams* 1575.

The species is notable for the very large leaves and ample panicles.

***Faramea miconioides*, sp. nov.**—Frutex c. metralis glaber, ramulis subteretibus crassiusculis sordide olivaceis glabris, internodiis 3.5-6 cm. longis; stipulae maximae alte connatae 3.5-4 cm. longae longe attenuatae (perfectae non visae); folia breviter petiolata opposita, petiolo 13-20 mm. longo crasso; lamina tenuiter coriacea elliptico-oblonga vel obovato-oblonga 14-16 cm. longa, 5.5-6.5 cm. lata, abrupte acuta vel breviter acuminata, acumine triangulari obtuso, basin versus breviter angustata, basi ipsa acuta, supra viridis, costa venisque subimpressis, subtus in sicco brunnescens, costa crassiuscula elevata, nervis lateralibus utroque latere c. 19 angulo recto divergentibus, prominulis, gracilibus, fere rectis, remote a margine nervum collectivum distinctum efformantibus, nervulis prominulis laxe reticulatis; inflorescentia terminalis sessilis cymoso-paniculata, 4.5 cm. longa et fere aequilata, laxa multiflora, basi trichotoma, ramis gracilibus adscendentibus, bracteis inconspicuis lanceolatis vel triangularibus acuminatis plerumque 1-2 mm. longis, cymulis trifloris, pedicellis c. 3 mm. longis; hypanthium anguste turbinatum 2 mm. longum, calyce caeruleo late campanulato 1.5 mm. longo, laciniis lineari-oblongis obtusis fere 1 mm. longis sinubus latis rotundatis sejunctis; corolla in alabastro 5 mm. longa oblongo-linearis caerulea apice anguste obtusa.—Peru: Pichis Trail, Dos de Mayo, Dept. Junín, in dense forest, alt. 1,700-1,900 m., July 2-3, 1929, *E. P. Killip and A. C. Smith* 25808 (Herb. Field Mus. No. 607,650, type).

From all the species of *Faramea* known to occur in Peru, this is easily distinguished by its conspicuously 3-nerved leaves.

***Faramea axillaris*, sp. nov.**—Frutex 0.3-1.5 m. altus omnino glaber pauciramosus vel subsimplex, ramis vetustioribus subteretibus ochraceis rimosis, internodiis brevibus; stipulae suberectae persistentes virides vix connatae, e basi late triangulari 2-2.5 mm. longa in

aristam rigidam 6-7 mm. longam desinentes; folia brevissime petiolata opposita, petiolo crasso 2-9 mm. longo; lamina membranacea vel crasse membranacea oblanceolato-oblonga vel obovato-oblonga, rarius oblonga, 8-19 cm. longa, 3.5-6.5 cm. lata, abrupte acuta vel breviter acuminata, acumine lato obtuso vel acuto, basin versus anguste angustata vel cuneatim angustata, basi ipsa acuta vel obtusa, supra pallide viridis, costa venisque prominentibus, subtus vix pallidior, costa gracili elevata, nervis lateralibus utroque latere c. 11 angulo fere recto abeuntibus, gracilibus, prominulis, leviter curvis vel fere rectis, remote a margine conjunctis, venulis vix prominulis reticulatis; flores pauci in axillis dense fasciculati vel dense breviterque cymosi, sessiles vel subsessiles, bracteis minutis subulatis; hypanthium obovoideum 0.8 mm. longum, calyce 1.2 mm. longo campanulato truncato; corolla alba, tubo gracili 4 mm. longo, lobis 4 patentibus vel recurvis 2.5-3 mm. longis oblongis acuminatis; fructus caeruleus globosus fere 1 cm. longus; semen 1 subglobosum 7 mm. longum cinereum facie inferiore profunde alveolato-excavatum.—Peru: In dense forest, Balsapuerto, lower Río Huallaga Basin, Dept. Loreto, alt. 150-350 m., August 28-30, 1929, *E. P. Killip and A. C. Smith 28655* (U. S. Nat. Herb., type), *28493*. Santa Rosa, lower Río Huallaga below Yurimaguas, Dept. Loreto, 135 m., in dense forest, *Killip & Smith 28900, 28711, 28939*. Yurimaguas, 135 m., in dense forest, *Killip & Smith 28198*. Soledad, on Río Itaya, Dept. Loreto, 110 m., in dense forest, *Killip & Smith 29643*. Puerto Arturo, lower Río Huallaga below Yurimaguas, 135 m., in dense forest, *Killip & Smith 27924*.

Other species of *Faramea* with axillary inflorescence are known from various parts of Brazil, but this is the first one with this type of inflorescence to be reported from Peru.

***Faramea stenocalyx*, sp. nov.**—Frutex omnino glaber, ut videtur dense ramosus, ramulis gracilibus teretibus vel subcompressis pallidis, internodiis foliis brevioribus; stipulae in vaginam c. 1 mm. longam truncatam connatae, margine vaginae laciniis 4 minutis subulatis unusto; folia petiolata opposita, petiolo gracili 6-12 mm. longo; lamina lanceolato-oblonga, oblanceolato-oblonga vel anguste elliptico-oblonga 4-8 cm. longa, 1-2.3 cm. lata, breviter vel longe attenuato-acuminata, acumine angusto apice obtuso, basin versus longe sensimque angustata, subcoriacea, supra viridis, costa venisque pallidis prominulis, subtus multo pallidior, costa gracili elevata, nervis lateralibus utroque latere c. 10 obliquis, angulo semirecto adscendentibus, gracillimis, prominulis, pallidis, prope marginem conjunctis, nervulis paucis laxissime reticulatis inconspicuis; inflorescentia terminalis sessilis vel 2 cm. longe pedunculata, capitata vel e basi trichotoma et e capitulis 8 2-4-floris 5-7 mm. longe pedunculatis composita, capitulis bracteis paucis triangulari-lanceolatis 2-4 mm. longis fulcratis, floribus sessilibus; hypanthium turbinato-cylindraceum 2 mm. longum, calyce campanulato-tubuloso 8-9 mm. longo supra 4 mm. lato in sicco purpurascente breviter 5-lobato, lobis erectis triangulari-

ovatis 2 mm. longis acutiusculis; corolla caerulea extus glabra, tubo crassiusculo 10–11 mm. longo, c. 2 mm. crasso, lobis 2.5 mm. longis.—Brazil: Serra dos Orgãos, in 1888, *A. Glaziov 17047* (Herb. Berol., type).

A species of Mueller's section *Homaloclados*, and related to *F. Eichleri* Muell. Arg. and *F. affinis* Muell. Arg., both of which are Brazilian. *F. Eichleri* has broader leaves and very different stipules. *F. affinis* also has broader leaves, its calyx is very different, and its corolla relatively longer.

Faramea paupera, sp. nov.—Arbor 3.5–4.5 m. alta omnino glabra, ramis teretibus ochraceis, novellis gracilibus rigidis viridibus interdum subangulatis et striatulis, internodiis brevibus; stipulae erectae persistentes virides vix connatae late triangulares 1–1.5 mm. longae, in aristam rigidam 2 mm. longam desinentes; folia breviter petiolata opposita, petiolo crassiusculo 3–7 mm. longo; lamina rigide membranacea oblongo-elliptica vel lanceolato-oblonga 5.5–11 cm. longa, 1.5–4.5 cm. lata, acuminata, acumine anguste triangulari attenuato obtuso, basin versus breviter angustata, basi ipsa acuta vel acuminata, supra viridis, sublucida, costa venisque elevatis, subtus fere concolor, costa gracili elevata, nervis lateralibus utroque latere c. 11 subobliquis, angulo lato adscendentibus, gracilibus, prominentibus, fere rectis, prope marginem conjunctis, venulis prominulis arcte reticulatis; inflorescentia terminalis vix 1.5 cm. longa basi trichotoma, laxe pauciflora, e cymulis 3 trifloris composita, ramulis gracilibus teretibus, bracteis obsoletis, pedicellis rectis 1–2 mm. longis; hypanthium turbinatum 1 mm. longum basi attenuatum, calyce campanulato 1.3 mm. longo viridi truncato; corolla "viridis" in alabastro 4.5 mm. longa apice attenuata, lobis attenuatis tubum aequantibus.—Brazil: In sandy woods, Manaos, State of Amazonas, alt. 25 m., October 13, 1929, *E. P. Killip and A. C. Smith 30105* (Herb. Field Mus. No. 607,634, type).

The species is noteworthy for its much reduced inflorescence and small flowers.

Cephaelis paraensis (Huber), sp. nov. *Geophila paraensis* Huber in herb.—Herba repens ramosa, caulibus radicanibus crassiusculis 1.5–2 mm. diam., dense pilis multicellularibus pallidis debilibus villosis, internodiis plerumque 4–6.5 cm. longis; folia petiolata opposita, petiolo 5–12 mm. longo crassiusculo dense villosociliato; stipulae virides persistentes suberectae villosociliatae 5–6 mm. longae profunde bifidae, laciniis anguste lanceolatis attenuatis; lamina tenuiter membranacea ovalis vel ovali-ovata, 3–8.5 cm. longa, 1.5–6 cm. lata, apice obtusa vel rotundata, interdum abrupte apiculata, rarius subacuta, basi breviter vel profundius cordata, rarius tantum rotundata, supra viridis, satis dense pilis gracillimis fulvis villososericea, ad costam densissime subadpresso-villosa, venis conspicuis sed vix elevatis, subtus pallida, interdum ut videtur purpurascens, ubique sparse minuteque villosula, costa lata prominula, venis conspicuis

prominulis utroque latere c. 10, angulo recto abeuntibus, gracillimis, leviter curvis, juxta marginem conjunctis; capitula axillaria vel in dichotomiis pseudo-terminalia, densissime multiflora, c. 2.5 cm. lata et fere aequilonga, 1.5–3 cm. longe pedunculata, pedunculo gracili glabro; bractae numerosissimae virides subaequilongae palmatim partitae, laciniis linearibus vel anguste lanceolatis crispis longissime angustaeque attenuatis, dense villosulo-ciliatis; calyx 5-partitus, laciniis anguste triangularibus 1.5 mm. longis; corolla alba (perfecta non visa) in alabastro 5 mm. longa extus glabra; fructus ut videtur caeruleus glaber 7–8 mm. longus ovalis.—Brazil: A creeper on damp soil and leaves in forest near Belem, State of Pará, March 27, 1929, *L. Williams and E. Sella* 32 (Herb. Field Mus. No. 602,008, type). Belem, March–May, 1929, *Dahlgren & Sella* 630. Without definite locality, *Huber* 794.

The name *Geophila paraensis* Huber is associated with No. 794, listed above, a specimen in the herbarium of the Museu Goeldi, of which a photograph and fragment are preserved in the herbarium of Field Museum. The plant is clearly a *Cephaelis* rather than a *Geophila*, and it is closely related, evidently, to *C. alba* (Aubl.) Willd., of the Guianas, of which I have seen no specimens. The leaves of the Guiana plant are described as glabrous, and the heads as terminal.

Cephaelis spathicalyx (Muell. Arg.), comb. nov. *Psychotria spathicalyx* Muell. Arg. in Mart. Fl. Bras. 6^o: 319. pl. 50, f. 2. 1881.

Cephaelis Krauseana, sp. nov.—Frutex, ramulis gracilibus subteretibus glabris fusco-brunnescentibus, novellis subcompressis ad nodos sparse pilosis, internodiis elongatis; stipulae erectae persistentes viridescentes basi brevissime connatae bifidae, laciniis oblongo-linearibus approximatis 3.5–4.5 mm. longis nervulosis attenuatis villosulo-ciliatis; folia brevissime petiolata opposita, petiolo gracili 4–5 mm. longo villosulo-piloso; lamina crasse papyracea oblongo-elliptica vel obovato-oblonga 6–11.5 cm. longa, 2.5–5 cm. lata, abrupte acuta vel breviter acuminata, acumine triangulari subobtusulo, basi acuta, supra ad costam sparse pilosa, aliter glabra, costa prominente, venis impressis, subtus brunnescentis, ad costam venasque villosulo-pilosa vel glabrata, costa gracili elevata, nervis lateralibus utroque latere c. 11 obliquis, angulo semirecto vel latiore abeuntibus, gracilibus, prominentibus, arcuatis, prope marginem conjunctis, nervulis plerumque transversis et distantibus; inflorescentia terminalis c. 1 cm. longe pedunculata capitata, pedunculo sparse piloso, capitulo bracteis 4 liberis ovalibus vel late ellipticis c. 1 cm. longis obtusis glabris ciliatis arcte involucreto, bracteis bracteolisque usque ad 5 mm. longis densis anguste spathulatis ciliatis, floribus numerosis sessilibus; corolla in alabastro 4 mm. longa clavato-oblonga apice obtusa et dense villosula; cetera ignota.—Brazil: In thicket along stream, Rio Arinos, Matto-Grosso, December, 1914, *J. G. Kuhlmann* 1410 (Herb. Berol., type).

A member of Mueller's subgenus *Cephaelis*, group *Cephaelideae*, but differing from all the species described by Mueller in that group.

Cephaelis Glaziovii, sp. nov.—Omnino glabra, ramulis gracilibus subteretibus fuscis, novellis subcompressis, internodiis elongatis; stipulae erectae persistentes c. 3 mm. longae breviter bifidae, lobis breviter triangulari-subulatis; folia petiolata opposita, petiolo gracili 1–2 cm. longo; lamina tenuiter coriacea elliptico-oblonga vel lanceolato-oblonga 6.5–12.5 cm. longa, 2.5–5.5 cm. lata, acuta vel acuminata, acumine obtuso, basi acuta, supra in sicco fusco-viridis, costa venisque prominentibus, venulis obsoletis, subtus vix pallidior, costa gracili elevata, nervis lateralibus utroque latere 13–17 obliquis, angulo latiusculo abeuntibus, gracilibus, prominentibus, leviter curvis, in marginem desinentibus, nervulis fere obsoletis; inflorescentia terminalis 3 cm. longe pedunculata capitata, basi bracteis 2 magnis ut videtur rubris liberis convolutis supra recurvis late ovatis fere 2.5 cm. longis versus apicem angustatis fulcrata, bracteis sequentibus angustioribus 1.5 cm. longis, interioribus multo angustioribus et brevioribus, floribus paucis sessilibus; hypanthium turbinatum 1.5 mm. longum, calyce tubuloso 7 mm. longo, dentibus anguste triangularibus acutis 1.5 mm. longis erectis; corolla glabra c. 17 mm. longa, tubo gracili recto supra non dilatato in fauce glabro, lobis 5 reflexis triangulari-oblongis subobtusis 2.5 mm. longis.—Brazil: Without locality data, *A. Glaziovii* 20362 (Herb. Berol., type).

Probably referable to Mueller's subgenus *Tapogomea*; in that group distinguished by the comparatively small and narrow heads.

Cephaelis blepharophylla, sp. nov.—Herba vel suffrutex 30–50 cm. altus, erectus vel decumbens et ad nodos inferiores radicans, caulibus gracilibus teretibus sparse villosopilosis vel glabris, internodiis elongatis; stipulae persistentes suberectae in vaginam truncatam adpressam 2–4 mm. longam pilosam vel fere glabram connatae, vagina in lacinias 4 lineari-attenuatas 4–10 mm. longas ciliatas desinente; folia petiolata opposita, petiolo gracili 4–17 mm. longo piloso-ciliato; lamina membranacea elliptico-oblonga usque ad late elliptica 7–15 cm. longa, 2.5–7 cm. lata, abrupte longiacuminata, acumine 1–1.5 cm. longo longe attenuato, basi acuta vel subabrupte angustata et plus minusve decurrens, longe ciliata, supra laete viridis, glabra vel ad costam sparse longipilosa, costa venisque prominentibus, subtus parum pallidior, glabra, costa gracili elevata, nervis lateralibus utroque latere c. 8 obliquis, angulo latiusculo abeuntibus, gracillimis, prominulis, arcuatis, juxta marginem conjunctis, nervulis prominulis laxe reticulatis; inflorescentia terminalis capituliformis vel breviter denseque cymosa 5–10 mm. longe pedunculata, pedunculo dense caeruleo-piloso, capitulo 1.5–3 cm. lato basi bracteato, bracteis fere ad basin partitis, laciniiis anguste linearibus longe villosociliatis attenuatis 10–15 mm. longis, floribus sessilibus; hypanthium glabrum late turbinatum, calyce fere 1 mm. longo glabrato remote minuteque 5-denticulato; corolla "luteo-lilacina" gracilis extus fere glabra, tubo

gracillimo 13 mm. longo intus non barbato fauce breviter et abrupte dilatato, lobis patentibus c. 2 mm. longis intus glabris; baccae caeruleae subglobosae glabrae 5 mm. longae basi et apice rotundatae, pyrenis 2 dorso obtuse costatis facie interiore planis et angustissime sulcatis.—Brazil: Near Pará, March 27, 1929, *L. Williams and E. Sella* 33 (Herb. Field Mus. No. 602,009, type). Belem, State of Pará, in 1929, *Dahlgren & Sella* 489.—Peru: Mishuyacu, near Iquitos, Dept. Loreto, 100 m., in 1929, *G. Klug* 59.

Cephaelis blepharophylla is related to *C. trichophoroides* (Muell. Arg.) Standl., described from the State of Goyaz.

Cephaelis trichophoroides (Muell. Arg.), comb. nov.
Psychotria trichophoroides Muell. Arg. *Flora* 59: 541, 545. 1876.

Cephaelis tontaneoides, sp. nov.—Caules herbacei vel suffrutescentes 20–40 cm. longi, suberecti vel decumbentes vel procumbentes et ad nodos radicales, graciles, virides, subteretes, pilis longis debilibus albidis patentibus satis dense villosopilosi, internodiis plerumque 2–6.5 cm. longis; stipulae persistentes virides suberectae fere ad basin bifidae, laciniis linearibus 5–6 mm. longis longe attenuatis pilosis; folia breviter petiolata opposita, petiolo 4–7 mm. longo gracili longe piloso; lamina membranacea, lanceolato-oblonga vel anguste lanceolato-oblonga, 4–6.5 cm. longa, 1–2 cm. lata, longe sensimque acuminata, apice ipsa acuta, basi obtusa vel acutiuscula, utrinque dense pilis longis albidis patentibus mollibus pilosa, supra viridis, costa nervisque prominentibus, subtus paullo pallidior, costa gracili elevata, nervis lateralibus utroque latere c. 6, angulo acuto adscendentibus, prominulis, prope marginem conjunctis; inflorescentiae capitatae ex axillis supremis nascentes, dense pauciflorae, pedunculo gracili usque ad 2 cm. longo dense albido-piloso, bracteis exterioribus 8–9 mm. longis lanceolatis vel anguste oblongis longe acuminatis viridibus dense villosis, interioribus angustioribus et paullo brevioribus, floribus sessilibus; calycis laciniae subulatae 2–2.5 mm. longae ubique breviter pilosae; corolla infundibuliformis extus glabra vel superne pilulis paucis brevibus induta, tubo c. 5 mm. longo superne valde dilatato, lobis 5 patentibus ovato-oblongis obtusis.—British Guiana: Kamakusa, Upper Mazaruni River, July 11–22, 1923, *J. S. De La Cruz* 4239 (Herb. Field Mus. No. 544,814, type).—French Guiana: Without locality, *Poiteau* (Leningrad Herb.).

The present plant belongs to the group called *Trichocephalae* by Mueller in his treatment of the genus *Psychotria* in Martius' *Flora Brasiliensis*, a group which seems to be well represented in the Guianas and neighboring Brazil. This species bears some resemblance to the recently described *Cephaelis surinamensis* Standl. (*Field Mus. Bot.* 4: 335. 1929), but in that the broader leaves are rounded or subcordate at the base, and their pubescence consists of stiff hairs. *C. tontaneoides* resembles also *C. horridula* (Muell. Arg.) Standl. (l. c.), of Brazil, but in that the heads are sessile.

Cephaelis barcellana (Muell. Arg.), comb. nov. *Psychotria barcellana* Muell. Arg. in Mart. Fl. Bras. 6⁶: 369. 1881.

The type was collected by Spruce along the Río Negro in Brazil, and the species is reported also from southern Venezuela. Apparently it has a wide distribution, as the specimens cited below show. The species, if it be a valid one, is exactly like *C. tomentosa* (Aubl.) Vahl in general appearance, but it may be recognized by the fact that the copious hairs along the lower surface of the midrib are all closely appressed, rather than spreading almost at right angles, as in *C. tomentosa*.

Venezuela: Lower Orinoco, *Rusby & Squires 223*.—Colombia: Near Hetuchá, Territorio del Caquetá, *Woronow 6054*.—Peru: Ucayali, *Tessmann*. Iquitos, *Williams 1381*; *Killip & Smith 26970, 26931, 27377*; a shrub 2 m. high or less with bright red bracts and light yellow corollas, the fruit bright blue. Lower Río Nanay, *Williams 341, 682, 714*. Pinto Cocha, on the Río Nanay, *Williams 782*. Tira Doble, on the Río Nanay, *Williams 1075*; growing at the edge of a stream in deep forest. Punchana, near Iquitos, *Williams 1329, 1326*. Pebas, on the Amazon River, *Williams 1624, 1683, 1690, 1692*; growing in forest; called "awa." Caballo Cocha, on the Amazon River, *Williams 2323, 2069*.

Cephaelis flaviflora (Krause), comb. nov. *Uragoga flaviflora* Krause, Bot. Jahrb. Engler 40: 344. 1908.

The species has been known hitherto only from the type, but there are several recent collections at hand: Peru: Between Monzón and Huallaga, *Weberbauer 3686*; photograph and fragment of the type (in herb. Berol.) in herbarium of Field Museum. Pichis Trail, Santa Rosa, Dept. Junín, 625–900 m., *Killip & Smith 26180, 26186*; a shrub or tree of 3.5–6 m., the fruit brownish red, the bracts green with yellow margins; corolla light yellow. Pichis Trail, San Nicolás, Dept. Junín, 1,100 m., *Killip & Smith 25982, 26002*; a slender shrub 2.5–4.5 m. high; bracts pale or bright orange; corolla pure white; fruit white.

Cephaelis oleandrella Standl. Field Mus. Bot. 4: 334. 1929.

Two additional collections of this recently described species are now at hand: Peru: Pichis Trail, Dos de Mayo, Dept. Junín, 1,700–1,900 m., *Killip & Smith 25816*; a shrub of 2–2.5 m.; corolla light yellow, with white lobes. Pichis Trail, Yapas, Dept. Junín, 1,350–1,600 m., *Killip & Smith 25491*; a much-branched shrub 1.5–3.5 m. high; corolla yellow; fruit red.

Cephaelis affinis, sp. nov.—Frutex 1–2-metralis omnino glaber, ramulis crassis; stipulae perfectae non visae; folia longe petiolata

opposita, petiolo gracili 3.5–7.5 cm. longo; lamina crasse membranacea oblongo-elliptica 19–30 cm. longa, 8.5–14 cm. lata, abrupte acuminata, acumine fere 2 cm. longo anguste attenuato-triangulari subobtusio, basi acuta atque abrupte contracta et breviter decurrens, supra in sicco viridis, opaca, costa venisque non elevatis, subtus fere concolor, costa gracili valde elevata, nervis lateralibus utroque latere c. 10 obliquis, angulo semirecto vel latiore abeuntibus, gracilibus, prominulis, leviter curvis, juxta marginem conjunctis, nervulis obscuris arcte reticulatis; inflorescentia terminalis capitata graciliter 14 cm. longe pedunculata, in fructu 2.5 cm. lata, basi bracteis numerosis viridibus latissimis c. 8 mm. longis et 12 mm. latis apice late rotundatis arcte involucrata; baccae numerosae 2–4 mm. longe pedicellatae subglobosae 8–9 mm. longae intense purpureae, pyrenis 2 dorso leviter obtuso-costatis, facie interiore planis.—Peru: In dense forest, between Yurimaguas and Balsapuerto, lower Río Hualaga basin, Dept. Loreto, August 26–31, 1929, *E. P. Killip and A. C. Smith 28329* (U. S. Nat. Herb., type).

A relative of *C. dolichophylla* Standl., of the same region, the latter differing in its narrow leaves and long outer bracts.

Cephaelis Williamsii, sp. nov.—Frutex omnino glaber, ramulis gracilibus teretibus in sicco fuscis vel olivaceis, novellis subcompressis, internodiis brevibus vel elongatis; stipulae persistentes erectae in vaginam c. 1 mm. longam truncatam vel breviter rotundatam connatae; folia petiolata opposita, petiolo gracili 7–10 mm. longo; lamina crasse membranacea elliptico-oblonga 5.5–10.5 cm. longa, 2–4.5 cm. lata, abrupte acuminata vel caudato-acuminata, acumine 1–1.5 cm. longo interdum fere lineari subacuto, basi acuta, supra obscure olivacea, raphidibus paucis pallidis elongatis transversis conspersa, costa elevata, venis prominulis, subtus paullo pallidior, costa gracili elevata anguste marginata et remote ciliata, nervis lateralibus utroque latere c. 12, aliis 2–3 brevioribus sed vix tenuioribus interpositis, angulo fere recto abeuntibus, gracilibus, prominulis, prope marginem conjunctis, nervulis crebris transversis venulis paucis connexis; inflorescentia terminalis vel pseudo-axillaris capitata 1.2–1.8 cm. longe pedunculata basi bracteis 2 cochleatis 1 cm. longis late ovatis erectis versus apicem obtusum angustatis basi breviter connatis fulcrata, bracteis interioribus angustioribus c. 5 mm. longis, floribus paucis sessilibus; calyx ad apicem baccae persistens minutus vix 0.5 mm. longus denticulatus; bacca ovali-globosa 5–6 mm. longa basi et apice rotundata, pyrenis 2 vel abortu 1 dorso obtuse costatis.—Peru: In forest, Manfinsa, on the upper Río Nanay, Dept. Loreto, June 29, 1929, *Llewelyn Williams 1114* (Herb. Field Mus. No. 604,625, type), 1123.

The species is to be placed in the subgenus *Tapogomea*, in which it is noteworthy for its small flower heads.

Cephaelis Schunkeana, sp. nov.—Frutex 2.5–3.5 m. altus, ramulis crassiusculis subteretibus praesertim ad nodos pilosis vel

interdum glabratiss, internodiis elongatis; stipulae (perfectae non visae) pilosulae in vaginam 5 mm. longam truncatam connatae, persistentes, suberectae, vagina in lacinias 4 semiovatas 1 cm. longas desinentes; folia longe petiolata opposita, petiolo crasso 5–8 cm. longo glabrato; lamina firme membranacea elliptica 27–32 cm. longa, 14–15 cm. lata, abrupte acuminata, acumine anguste triangulari attenuato 2–3 cm. longo, basi acuta vel abrupte contracta et breviter decurrens, supra viridis, glabra, costa venisque non elevatis, subtus pallidior, ubique dense pilis pallidis velutino-pilosula, costa crassiuscula elevata, nervis lateralibus utroque latere c. 20 angulo lato saepe fere recto abeuntibus, gracilibus, prominentibus, leviter curvis, marginem attingentibus, nervulis prominulis laxè reticulatis; inflorescentia terminalis 5 cm. longe pedunculata e capitulis c. 7 racemose dispositis composita, pyramidalis, c. 5.5 cm. longa et aequilata, basi bracteis 2 late ovatis viridibus obtusis 1.5 cm. longis fulcrata, capitulis dense paucifloris 1–2 cm. longis, inferioribus crasse 1 cm. longe pedunculatis, superioribus sessilibus vel subsessilibus, pedunculis dense pilosis, bracteis exterioribus late ovatis vel ovalibus obtusis 10–13 mm. longis crassis dense puberulis vel pilosulis vel serius glabratiss, floribus sessilibus; calyx (perfectus non visus) ad apicem baccae persistens late tubulosus 4 mm. longus et ultra glaber; bacca subglobosa glabra c. 12 mm. longa basi et apice rotundata, pyrenis 2 c. 5 mm. longis dorso leviter et obtuse costatis, facie interiore profunde angusteque sulcatis.—Peru: In dense forest, Schunke Hacienda, above San Ramón, Dept. Junín, alt. 1,400–1,700 m., June 8–12, 1929, *E. P. Killip and A. C. Smith 24658* (Herb. Field Mus. No. 607,798, type).

Noteworthy for the very large, thin leaves, which are softly and densely pubescent beneath. This species is one of those which may be referred about equally well to either *Cephaelis* or *Psychotria*.

Cephaelis pebasensis, sp. nov.—Frutex, ramulis crassis obtuse tetragonis glabratiss, internodiis abbreviatis; stipulae suberectae persistentes crassae dorso unicostatae, c. 1.5 cm. longae, ad medium bifidae, lacinias semiovatis subacutis; folia petiolata opposita, petiolo gracili vel crassiusculo 3–4 cm. longo glabro; lamina chartacea elliptico-oblonga 14–26 cm. longa, 5–11 cm. lata, abrupte breviacuminata, acuta vel fere rotundata et apiculata, basi abrupte angustata et breviter decurrens, supra viridis, glabra, costa venisque prominentibus vel prominulis, subtus pallidior, vinacea, minute denseque albidopuncticulata, ad costam sparse pilosula, aliter glabra, costa gracili elevata, nervis lateralibus utroque latere c. 14 angulo fere recto abeuntibus, gracilibus, prominentibus, leviter curvis, marginem attingentibus, nervulis vix prominulis laxè reticulatis; inflorescentia terminalis crasse 2.5–3.5 cm. longe pedunculata, subrecurva, e capitulis 3–5 umbellatis vel breviter racemosis composita, basi bracteis 2 late ovatis obtusis 1–1.5 cm. longis fulcrata, capitulis crasse 1–1.5 cm. longe pedunculatis, pedunculis glabris vel glabratiss, capitulis dense multifloris c. 1.5 cm. diam., bracteis exterioribus c.

1 cm. longis late ovatis usque ad oblongis acutis vel obtusis sparse puberulis, interioribus angustioribus acuminatis apice saepe subrecurvis, floribus sessilibus dense congestis; calyx ad apicem baccae persistens (perfectus non visus) subtubulosus 2-3 mm. longus profunde 5-fidus sparse puberulus, laciniis lineari-attenuatis; bacca oblonga 5-6 mm. longa, 3 mm. lata, sparse pilosula, ut videtur caerulea, pyrenis 2 dorso grosse costatis, facie interiore anguste profundeque sulcatis.—Peru: In forest, Pebas, on the Amazon River, Dept. Loreto, July 26, 1929, *Llewelyn Williams 1786* (Herb. Field Mus. No. 604,576, type); July 24, 1929, *Williams 1657*.

Cephaelis Killipii, sp. nov.—Frutex 1-3.5 m. altus praeter inflorescentiam omnino glaber, ramulis gracilibus subteretibus viridibus, internodiis elongatis; stipulae erectae persistentes 4 mm. longae breviter connatae late ovatae, ad medium bilobae, lobis subulato-acuminatis; folia breviter petiolata opposita, petiolo gracili 7-15 mm. longo; lamina chartacea oblonga, elliptico-oblonga vel obovato-oblonga, 9-18 cm. longa, 3-5.5 cm. lata, abrupte acuminata, acumine angusto attenuato 1-2 cm. longo, basin versus sensim acuminata, supra intense viridis, raphidibus elongatis pallidis transversis notata, costa elevata, venis inconspicuis, subtus pallidior, costa lata depressa marginata et ciliata, nervis lateralibus utroque latere c. 16, aliis 2 brevioribus et parum tenuioribus interpositis, angulo recto abeuntibus, tenerrimis, prominulis, arcuatis, prope marginem conjunctis, nervulis paucis plerumque subtransversis; inflorescentia terminalis 1.2-2 cm. longe pedunculata capitata pauciflora, pedunculo crasso erecto sparse pilosulo, bracteis paucis, exterioribus late ovatis c. 8 mm. longis et 6-7 mm. latis abrupte longiacuminatis viridibus glabris ciliatis, interioribus paullo brevioribus, floribus sessilibus; calyx ad apicem baccae persistens tubulosus 4 mm. longus viridis glaber 5-fidus, laciniis lineari-attenuatis erectis tubo paullo brevioribus ciliatis; baccae rubrae subglobosae 8-9 mm. longae glabrae, pyrenis 2 dorso fere laevibus facie interiore planis.—Peru: In dense forest, San Antonio, on Río Itaya, Dept. Loreto, alt. 110 m., September 18, 1929, *E. P. Killip and A. C. Smith 29303* (Herb. Field Mus. No. 607,497, type), *29425*. Soledad, on Río Itaya, *Killip & Smith 29624*.

Psychotria axillaris Willd.—The distribution of this well-marked species, with axillary inflorescences, seems to be rather erratic. It is known from Colombia, the Guianas, Bolivia, and Trinidad, and it may be reported now from Central America, a new record for the North American continent: British Honduras: Middlesex, in dense forest, rare, elevation about 60 m., November, 1929, *W. A. Schipp. S68*.

Psychotria plthecobia, sp. nov.—Frutex epiphyticus omnino glaber, ramulis teretibus gracilibus, vetustioribus cinnamomeis vel fere ochraceis, internodiis plerumque elongatis; stipulae in vaginam

brevem valde incrassatam truncatam persistentem connatae; nodi infra insertionem petioli annulari-incrassati; folia petiolata opposita, petiolo subgracili 5-7 mm. longo; lamina in sicco coriacea elliptico-oblonga 5-8 cm. longa, 1.7-3.5 cm. lata, longiuscule acuminata, acumine saepe falcato attenuato acuto, basi acuta vel basin versus breviter angustata, supra in sicco luteo-fusca, costa venisque interdum prominulis et semper manifestis, subtus concolor, costa gracili elevata, nervis lateralibus utroque latere c. 10 obliquis, angulo c. semirecto abeuntibus, prominentibus, gracilibus, leviter curvis, marginem attingentibus, nervulis obsoletis; inflorescentia terminalis 3.5-5 cm. longe pedunculata cymoso-corymbosa laxa multiflora, 3.5-4 cm. longa et 5-7 cm. lata, basi trichotoma, ramis gracilibus oppositis saepe patentibus basi bracteatis, bracteis lineari-subulatis patentibus plerumque 2-3 mm. longis, floribus in cymulas laxas dispositis, pedicellis 2-4 mm. longis; calyx ad apicem baccae persistens 1 mm. longus, ad medium 5-lobus, lobis anguste triangularibus acutis; bacca subglobosa nigra 4-5 mm. longa basi et apice rotundata, pyrenis 2 dorso leviter obtuseque costatis facie interiore profunde lateque sulcatis.—Costa Rica: Growing upon a tree, La Palma, alt. 1,550 m., August 15, 1898, A. Tonduz 12432 (Herb. Berol., type). Matina, August, 1895, Pittier 9751 (Herb. Berol.).

Evidently this is a relative of *P. crassa* Benth., of northern South America, but it differs from that species in the conspicuous nerves of the leaves and in the long pedicels.

***Psychotria mombachensis*, sp. nov.**—Frutex 1.5 m. altus omnino glaber, ramulis gracilibus teretibus viridibus ad nodos constrictis, internodiis elongatis; stipulae persistentes 3 mm. longae virides profunde bilobae, lobis late ovatis apice obtusis vel rotundatis; folia petiolata opposita, petiolo gracili 1-2 cm. longo; lamina membranacea elliptico-oblonga vel obovato-oblonga 10-17 cm. longa, 4-6.5 cm. lata, abrupte acuminata, acumine triangulari vel anguste triangulari obtuso, basin versus longe sensimque angustata, supra laete viridis, costa venisque prominulis, subtus parum pallidior, costa gracili elevata, nervis lateralibus utroque latere c. 14 subobliquis, angulo recto vel saepe latiore abeuntibus, gracillimis, prominentibus, fere rectis, prope marginem conjunctis, nervulis obscuris; inflorescentia terminalis 1 cm. longe pedunculata cymoso-corymbosa laxa pauciflora 2.5 cm. longa et 5 cm. lata, basi trichotoma, ramis paucis oppositis basi bracteatis, bracteis usque ad 2 mm. longis subulatis, floribus aggregatis sessilibus; hypanthium cylindraceum 1 mm. longum, calyce 1.2-1.4 mm. longo campanulato ad medium 5-fido, lobis oblongis apice obtusis vel anguste rotundatis; corolla gracilis extus glabra fauce non barbata in alabastro apice subobtusa et minute tuberculata, tubo recto 13 mm. longo supra vix dilatato ore 1.5 mm. lato, lobis oblongis obtusis vix 3 mm. longis.—Nicaragua: In coffee plantation, Mombacho Volcano, alt. 600-750 m., July 5, 1923, William R. Maxon, Alfred D. Harvey and A. T. Valentine 7818 (Herb. Field Mus. No. 600,068, type).

In details as well as in general appearance this is similar to *P. pedunculata* Sw., of Jamaica, but it differs from that in the longer corolla, short peduncles, and conspicuously elongate calyx lobes.

***Psychotria rufidula*, sp. nov.**—Frutex, ramulis gracilibus teretibus laevibus olivaceis vel griseis, novellis dense pilis brevibus patentibus rufis villosulo-hispidulis, internodiis 1–4 cm. longis; stipulae caducae ovatae acutiusculae 3–4 mm. longae dense ferrugineo-villosulae; folia opposita breviter petiolata, petiolo gracili 2–3 mm. longo subtereti dense ferrugineo-puberulo; lamina firme membranacea lanceolato-oblonga, 4.5–9 cm. longa, 1.4–3 cm. lata, sensim acuminata, basin versus sensim angustata, supra viridis, glabra, costa subimpressa, nervis nervulisque non elevatis, subtus brunnescens, ad costam gracilem prominulam pilis brevibus griseis vel ferrugineis patentibus pilosula, aliter sparse minuteque puberula vel cito glabrata, nervis lateralibus utroque latere 7–8, tenuibus, fere rectis, angulo lato adscendentibus, remote a margine arcuato-conjunctis, nervulis manifestis sed vix prominulis laxe reticulatis; inflorescentia terminalis sessilis, e basi plerumque trichotoma, radiis primariis 0.8–2 cm. longis rectis suberectis dense ferrugineo-hispidulis, bracteis late ovatis membranaceis brunneis caducis; flores sessiles vel usque ad 2 mm. longe pedicellati, cymoso-corymbosi, saepe ad apices ramulorum brevium dense congesti; hypanthium breve ferrugineo-puberulum, calyce c. 1 mm. longo late campanulato remote denticulato sparse minuteque puberulo; corolla infundibuliformis extus glabra, tubo 2.5 mm. longo fauce valde dilatato, intus non barbato, lobis 5 ovali-ovatis 1 mm. longis obtusis recurvis intus minutissime puberulis; filamenta breviter exserta glabra, antheris oblongis fere 1 mm. longis obtusis; fructus ovalis 3–3.5 mm. longus glabratus, pyrenis dorso obtuse costatis.—Trinidad: Southern Range, Quinam Road, June 25, 1929, *R. O. Williams 12195* (Herb. Bot. Gardens, Trinidad and Tobago, type).

The plant simulates in aspect *P. alba* R. & P. and *P. carthaginensis* Jacq., but it differs from both those species in the conspicuous pubescence of the lower leaf surface and inflorescence.

***Psychotria uliginosa* Sw. Prodr. Veg. Ind. Occ. 43. 1788.**

Although a widely distributed species, extending from the West Indies as far southward as the Orinoco region, and occurring in Panama, this species was not reported in the writer's recent enumeration of the Colombian Rubiaceae. It may now be recorded, as follows: Colombia: Sucre, Territorio del Caquetá, July, 1926, *G. Woronow & S. Juzepczuk 5865* (Leningrad Herb.).

***Psychotria Woronovii*, sp. nov.**—Ramuli crassiusculi obtuse tetragoni in sicco fusci sparse villosuli vel fere glabri, internodiis plerumque 4.5–6 cm. longis; stipulae 1–2 cm. longae persistentes

suberectae glabrae vel basi tantum villosulae ciliolatae profunde bifidae, laciniis late semiovatis acutis; folia breviter petiolata opposita, petiolo 9-18 mm. longo gracili sparse villosulo vel glabrato; lamina rigide papyracea elliptica vel elliptico-obovata 16-19 cm. longa, 5.5-8 cm. lata, abrupte acuminata, acumine anguste triangulari vel lanceolato-triangulari attenuato obtusiusculo, basin versus longe attenuato-acuminata vel rarius tantum acuta, supra in sicco fusca, lucidula, costa venisque subimpressis, subtus pallidior, minutissime pallido-puncticulata, ubique minutissime adpresso-pilosula vel glabrata, ad venas minute villosula, costa glabra sed utroque latere ciliata gracili elevata, nervis lateralibus utroque latere c. 13 obliquis, angulo lato interdum fere recto abeuntibus, gracilibus, prominentibus, arcuatis, marginem attingentibus, nervulis obscuris; inflorescentia terminalis magna e capitulis numerosis longipedunculatis umbellatis vel subracemosis composita, sessilis, c. 26 cm. longa et fere aequilata, basi trichotoma, ramis gracillimis valde elongatis sparse sordido-villosulis, bracteis ad basin ramorum insertis oblongo-ovatis obtusis ciliatis et plus minusve villosulis 5-7 mm. longis, capitulis dense multifloris subglobosis c. 1 cm. diam. graciliter 12-20 mm. longe pedunculatis; bractee capitulorum numerosae c. 4 mm. longae late ovatae vel subrotundatae, apice obtusae vel rotundatae, arcte adpressae, sparse villosulae vel glabratae; flores arcte sessiles; hypanthium minutum villosulum, calyce campanulato 2.5 mm. longo truncato sparse villosulo vel glabrato; corolla in alabastro extus dense villosulo-tomentella 7 mm. longa, versus apicem paullo angustata, apice 5-cornuta.—Colombia: Hetuchá, on the Río Orteguaza, in forest at the lake Cocha Quecachiara, Territorio del Caquetá, July 22, 1926, *G. Woronow and S. Juzepczuk 6215* (Leningrad Herb., type).

This well-marked species resembles *P. brachiata* Sw., a widely dispersed shrub of tropical America, but it differs conspicuously from that in the large stipules, exceptionally large inflorescence, and in details of the flowers.

***Psychotria tenuicaulis* Krause, Notizbl. Bot. Gart. Berlin 8: 101. 1922.**

Described from Peru, and known hitherto only from the Amazonian region of that country, this species may now be reported from Colombia: Tres Esquinas on the Río Caquetá, at the mouth of the Río Orteguaza, July, 1926, *G. Woronow & S. Juzepczuk 6266*.

***Psychotria atabapoensis*, sp. nov.**—Frutex omnino glaber, ramulis gracillimis in sicco subcompressis luteo-viridibus, internodiis valde elongatis; stipulae persistentes viridescentes in vaginam arcte adpressam truncatam 1-2 mm. longam connatae, margine vaginae dentibus 2 remotis subulatis vix 1 mm. longis instructo; folia breviter petiolata opposita, petiolo gracili 7-10 mm. longo; lamina rigide chartacea oblonga, lanceolato-oblonga vel ovato-oblonga, 10-14 cm. longa, 2.5-6 cm. lata, anguste cartilagineo-marginata, acuminata vel

longiacuminata, acumine angusto longe attenuato apice acuto, basi acuta vel cuneato-acuta, rare subrotundata, supra in sicco luteo-viridis, sublucida, costa venisque prominulis, subtus fere concolor, costa gracili elevata, nervis lateralibus utroque latere c. 13 obliquis, angulo angusto adscendentibus, prominentibus, gracilibus, fere rectis vel subcurvis, in marginem desinentibus, venulis prominulis laxè reticulatis; inflorescentia terminalis graciliter 5–7.5 cm. longe pedunculata, thyrsoido-paniculata, laxè multiflora, 3.5–7 cm. longa, 3.5–5.5 cm. lata, ramis gracilibus plerumque alternis patentibus teretibus pallidis dichotomis basi nudis, floribus sessilibus secus ramulos paulo elongatis insertis, bracteis nullis vel minutis; hypanthium columnare 0.5 mm. longum, calyce remote minuteque denticulato duplo brevior; corolla sordide alba 4 mm. longa in alabastro anguste obovoidea et apice rotundata, tubo crasso superne sensim dilatato, intus non barbato, lobis 5 subrectis oblongo-ovatis obtusis 1 mm. longis; discus tumidus calycem aequans.—Venezuela: San Fernando de Atabapo, on stream bank, January 14, 1913, *Th. Koch-Grünberg* 67 (Herb. Berol., type).

The relationship of this plant is with *P. patens* Sw., one of the most widely dispersed of American Psychotrias. The latter differs constantly in its larger stipules, less numerous leaf veins, and narrower inflorescence.

Psychotria Victoriae, sp. nov.—Frutex vel arbor usque ad 6 m. alta, ramulis gracilibus obtuse tetragonis puberulis vel glabris, internodiis elongatis; stipulae erectae persistentes 5–8 mm. longae glabrae breviter bilobae, lobis obtusis vel rotundatis; folia petiolata opposita, petiolo gracili 1.5–3 cm. longo glabro pilosulo; lamina papyracea oblonga vel elliptico-oblonga 14–20 cm. longa, 5–8.5 cm. lata, abrupte breviterque acuminata vel cuspidato-acuminata, acumine angusto attenuato subobtus, basin versus breviter angustata, supra viridis, glabra, costa venisque interdum elevatis, subtus fere concolor, glabra vel ad costam venasque pilosula, costa crassiuscula elevata, nervis lateralibus utroque latere c. 13 angulo fere recto abeuntibus, gracilibus, prominentibus, arcuatis, juxta marginem conjunctis, nervulis prominulis laxè reticulatis; inflorescentia terminalis 5.5–8 cm. longe pedunculata e capitulis 4–7 racemose dispositis composita, 8.5–9.5 cm. longa, 6–8 cm. lata, ramis primariis 1–4 cm. longis patentibus gracilibus breviter pilosis vel fere glabris basi bracteis late oblongis obtusis involutis c. 1 cm. longis fulcratis, capitulis dense multifloris subglobosis 1–2 cm. diam., floribus sessilibus congestis; bracteis exterioribus arcte adpressis late rotundatis 6–9 mm. longis crassis glabris ciliatis intense purpureis; calyx ad apicem baccae persistens tubuloso-campanulatus adpresso-pilosus 2–4 mm. longus truncatus; bacca ut videtur caerulea subglobosa 4–5 mm. longa basi et apice rotundata, prope apicem dense breviterque pilosa, pyrenis 2 dorso obtuse costatis, facie interiore planis et longitrorsum anguste profundeque sulcatis.—Peru: In forest, La Victoria, on the Amazon

River, Dept. Loreto, September 5, 1929, *Llewelyn Williams 3080* (Herb. Field Mus. No. 604,438, type). In dense forest, Puerto Yesup, Dept. Junín, 400 m., July, 1929, *Killip & Smith 26255*.

This plant is clearly a relative of *P. brachiata* Sw., which grows in the same general region, but that species differs conspicuously in its small flower heads, as well as in numerous other particulars.

***Psychotria emetica* L. f.**—Although this species was to be expected in Peru, having been found as far southward as Bolivia, there are no records of its actual occurrence there. The following recent collection may be reported: Peru: Río Apurímac Valley near Kimpitiriki, Dept. Ayacucho, 400 m., May, 1929, *Killip & Smith 22876*.

***Psychotria Weberbaueri*, sp. nov.**—Arbor 8 m. alta, ramulis crassis obtuse tetragonis fuscis glabris, internodiis abbreviatis; stipulae caducae breviter connatae glabrae, parte libera late triangulari obtusa 3 mm. longa; folia petiolata opposita, petiolo gracili 1.5–3 cm. longo glabro; lamina papyracea late elliptica vel late ovato-elliptica 13–25 cm. longa, 6.5–16 cm. lata, acuta vel abrupte et brevissime apiculato-acuminata, basi obtusa, rotundata vel subtruncata et abrupte contracta et longiuscule decurrens, glabra, supra in sicco fusca, costa venisque prominulis, subtus brunnescens, costa gracili elevata, nervis lateralibus utroque latere c. 25 saepe fere perpendicularibus, gracilibus, prominentibus, fere rectis vel leviter arcuatis, juxta marginem conjunctis, venulis obscuris; inflorescentia terminalis vel pseudo-axillaris sessilis cymoso-paniculata late pyramidalis, c. 7 cm. longa et 11 cm. lata, laxa multiflora, basi verticillato-ramosa, ramis patentibus glabris crassiusculis, bracteis minutis caducis, floribus plerumque in cymulas parvas dispositis, pedicellis vulgo 1–3 mm. longis glabris; hypanthium turbinatum 1 mm. longum glabrum basi acutum, calyce latissimo brevi 0.6 mm. longo truncato patente; corolla viridi-alba 5 mm. longa extus glabra, tubo brevissimo late campanulato, lobis oblongis acutiusculis intus glabris tubo plus quam duplo longioribus patentibus; stylus glaber 2 mm. longus, disco tumido.—Peru: In open forest, La Merced, Chanchamayo Valley, Dept. Junín, alt. 1,000 m., December, 1902, *A. Weberbauer 1872* (Herb. Berol., type).

The plant bears a superficial resemblance to *P. macrophylla* R. & P., but that species has an altogether different corolla.

***Psychotria alboviridula* Krause**, Notizbl. Bot. Gart. Berlin 6: 208. 1914.

The type of this species is *Ule 9846* from the Alto Acre, Seringal San Francisco, Brazil. A photograph and fragment of the type are in the herbarium of Field Museum. The following specimens, which are conspecific, extend the known range substantially:

Peru: Caballo Cocha, on the Amazon River, a shrub in forest, *Williams 2316*. La Victoria, on the Amazon, a shrub in forest, *Williams 2534, 2803*. Puerto Arturo, lower Río Huallaga below Yurimaguas, 135 m., a shrub 2.5-3 m. high in dense forest, *Killip & Smith 27878*. Puerto Bermúdez, Dept. Junín, 375 m., in dense forest, *Killip & Smith 26462*; a shrub 3.5-4.5 m. high; fruit deep red. Santa Rosa, lower Río Huallaga below Yurimaguas, 135 m., in dense forest, *Killip & Smith 28972*; a tree 6-7.5 m. high. Yurimaguas, Dept. Loreto, 135 m., in dense forest, *Killip & Smith 27680*; a shrub 3.5-4.5 m. high. Mishuyacu, near Iquitos, Dept. Loreto, 100 m., in dense forest, *Killip & Smith 29888*; a tree 4.5-6 m. high; fruit purple. Iquitos, in woods, *Killip & Smith 27046, 27050*; a shrub or tree 3-6 m. high; young fruit orange-red, the mature fruit deep red.

Psychotria camporum Krause, Notizbl. Bot. Gart. Berlin 6: 208. 1914.

In the herbarium of Field Museum there is a photograph, accompanied by a fragment, of the type, *Ule 8970*, collected along the Río Negro near Manaos, Brazil. The following collection appears to represent the same species: Brazil: A shrub in the capoeira near Cachoevinha, State of Amazonas, March, 1901, *Ule 5404* (Herb. Berol.).

Psychotria Herzogii S. Moore, Med. Rijks Herb. 46: 25. 1922.

This well-marked species is represented by several collections from Bolivia, the country from which it was described. The following specimens show that its range extends, naturally enough, to Amazonian Peru.

Peru: Soledad, on the Río Itaya, Dept. Loreto, 110 m., in dense forest, *Killip & Smith 29569, 29699*; a shrub 60-120 cm. high; fruit bright blue. Santa Rosa, lower Río Huallaga below Yurimaguas, Dept. Loreto, 135 m., in dense forest, *Killip & Smith 28712*; a shrub 60-90 cm. high; fruit bright blue. Yurimaguas, *Poeppig 2124*.

Psychotria bullatifolia, sp. nov.—Suffrutex vel herba simplex, caulibus ut videtur c. 10-12 cm. longis erectis crassis subteretibus sparse puberulis vel glabris, internodiis abbreviatis; stipulae cito deciduae, non visae; folia pauca petiolata opposita, petiolo crassiusculo 0.6-3 cm. longo sparse puberulo vel fere glabro; lamina herbacea oblonga vel ovali-oblonga 7-12 cm. longa, 3.5-5.5 cm. lata, apice obtusa vel rotundata et brevissime apiculata, basi acuta vel subrotundata, supra in sicco fusco-viridis, glabra, costa venisque non elevatis, valde inter venas bullata, subtus pallidior, brunnescens, minute albido-puncticulata, sparse pilis brevibus sordidis patentibus pilosula, costa lata prominente, nervis lateralibus utroque latere c. 13 angulo lato fere recto aebuntibus, prominentibus, gracilibus, leviter curvis, in marginem desinentibus, venulis obsoletis; inflorescentiae (una tantum visa) axillares graciliter 2.5 cm. longe pedunculatae

capituliformes dense multiflorae fere 1 cm. latae, bracteis basalibus late ovatis 4 mm. longis acutiusculis; pedicelli in statu fructifero graciles recti glabri 4 mm. longi; fructus ovalis 6 mm. longus glaber basi et apice rotundatus, pyrenis 2 dorso acute 5-costatis facie interiore medio longitrorsum 1-costatis et utrinque leviter excavatis. —Peru: In forest, Pebas, on the Amazon River, Dept. Loreto, July 27, 1929, *Llewellyn Williams 1803* (Herb. Field Mus. No. 604,504, type), 1666, 1662.

The material at hand is unsatisfactory, since two of the specimens are sterile, and the other bears only a single imperfect inflorescence, but there is no doubt regarding the relationship of the plant. It is related to *P. polyphlebia* Donn. Smith, a Costa Rican species, which is not similar to any other member of the genus that I have seen. *P. polyphlebia* differs from the Peruvian plant in having much more numerous veins in the leaves, which are conspicuously hirsute beneath.

***Psychotria rhodophylla*, sp. nov.**—Frutex 1–4.5 m. altus ramosus, ramulis gracilibus subteretibus vel in sicco interdum subcompressis et rubroinctis glabris vel minute pilosulis, internodiis elongatis; stipulae persistentes puberulae vel glabratae in vaginam 1–2.5 mm. longam truncatam connatae, vagina in lacinias 4 remotas 2.5–5 mm. longas lineari-subulatas erectas vel adscendentes desinente; folia brevissime petiolata opposita, petiolo 3–10 mm. longo crassiusculo puberulo vel glabrato; lamina membranacea vel papyracea elliptico-oblonga, elliptico-ovata, elliptica vel rare obovato-elliptica, 11–30 cm. longa, 5–15 cm. lata, acuta vel breviter abrupteque acuminata, rarius longe acuminata, acumine angusto attenuato acuto vel obtusiusculo, basi acuta vel rarius late obtusa, interdum abrupte contracta et cuneatim decurrens, supra laete viridis, glabra, costa venisque ut quoque interdum venuli prominulis, subtus in sicco rubroincta, glabra vel ad costam gracilem elevatam minute pilosula, nervis lateralibus utroque latere 9–11 angulo lato saepe fere recto abeuntibus, gracilibus, prominentibus, valde arcuatis, juxta marginem conjunctis, nervulis prominentibus laxe reticulatis vel plerumque transversis et subparallelis; inflorescentia terminalis capituliformis 5–12 mm. longe pedunculata basi non bracteata, densissime multiflora, 4.5–5 cm. lata et paullo brevior, in fructu usque ad 7 cm. lata, ramis primariis fastigiatis usque ad 5 mm. longis dense puberulis, bracteis exterioribus ovatis vel ellipticis 13–20 mm. longis apice acutis basi abrupte contractis minute puberulis vel fere glabris rubronerviis, interioribus brevioribus et angustioribus, floribus sessilibus ad ramulos breves cymularum secundis; hypanthium late cylindraceum 0.8 mm. longum minutissime puberulum vel glabrum calyce tubuloso-companulato 1.2–1.4 mm. longo subtruncato; corolla caerulea extus glabra, tubo gracili 12 mm. longo superne vix dilatato 2 mm. lato in fauce non barbato, lobis adscendentibus triangulari-oblongis acutiusculis 2.5–3 mm. longis; antherae inclusae; fructus glaber intense purpureus depresso-globosus 6 mm. longus et 7 mm. latus,

basi et apice late rotundatus, pyrenis 2 dorso laevibus, facie interiore planis.—In forest, Mishuyacu, near Iquitos, Dept. Loreto, alt. 100 m., in 1929, *G. Klug* 289 (Herb. Field Mus. No. 607,265, type). Between Yurimaguas and Balsapuerto, Dept. Loreto, 135-150 m., in dense forest, *Killip & Smith* 28084; bracts reddish purple. San Antonio on Río Itaya, Dept. Loreto, 110 m., in dense forest, *Killip & Smith* 29441. Maynas, *Poeppig*. Maynas, *Poeppig* 1083 (Herb. Berol.). Iquitos, 100 m., in woods, *Killip & Smith* 27112 (U. S. Nat. Herb.). Puerto Bermúdez, Dept. Junín, 375 m., in dense forest, *Killip & Smith* 26567 (U. S. Nat. Herb.).

A member of the subgenus *Eupsychotria*, section *Bracteosae*, as defined by Mueller in the *Flora Brasiliensis*. *Psychotria rhodophylla* must be related to *P. leucophaea* Poepp. & Endl., described from Ega, Brazil, but the Peruvian plant differs in several respects from the description of that species, particularly in its much larger inflorescences.

***Psychotria iquitosensis*, sp. nov.**—Frutex ramosus 0.5-3.5 m. altus praeter inflorescentiam omnino glaber, ramulis gracilibus teretibus viridibus vel olivaceis ad nodos in sicco saepe constrictis, internodiis elongatis; stipulae erectae persistentes virides in vaginam truncatam c. 1 mm. longam connatae, vagina in lacinias 4 remotas lineari-subulatas 3-4 mm. longas desinente; folia breviter petiolata opposita, petiolo gracili vel crassiusculo 3-8 mm. longo; lamina crasse membranacea vel papyracea lanceolato-oblonga vel rarius ovato-oblonga 7-17.5 cm. longa, 2.5-6 cm. lata, longe sensimque acuminata, acumine angusto longe attenuato acutissimo, basi acuta vel versus basin breviter angustata, rarius abrupte contracta et decurrens, supra laete viridis, costa venisque prominulis, subtus fere concolor, costa gracili elevata, nervis lateralibus utroque latere 7-12 obliquis, angulo acuto adscendentibus, gracilibus, prominentibus, arcuatis, in marginem desinentibus, nervulis prominulis laxe reticulatis; inflorescentia terminalis cymuloso-racemosa vel rarius cymuloso-paniculata, 1.5-3.5 cm. longa et fere aequilata, 1-3.5 cm. longe pedunculata, rhachi ut ramuli angulata sparse et minute pilosa vel glabrata, ramis brevibus rigidis divaricatis vel subreflexis simplicibus vel apice trifidis, bracteis persistentibus glabris lanceolatis viridibus 2-5 mm. longis, cymulis capituliformibus paucifloris, primo bracteis involucreatis, floribus congestis arcte sessilibus; hypanthium breve late turbinatum glabrum, calyce vix 0.5 mm. longo minute denticulato; corolla-alba extus glabra in alabastro obtusa, tubo cylindraceo 2.5-3 mm. longo fauce albo-barbato, lobis adscendentibus vel patentibus triangulari-oblongis obtusis 1.5 mm. longis; antherae ochroleucae oblongae 1 mm. longae breviter exsertae; fructus purpureus vel intense caeruleus subglobosus glaber 3-3.5 mm. longus basi et apice rotundatus, pyrenis 2 dorso acute 5-costatis, facie interiore profunde excavatis.—Peru: Near Iquitos, Dept. Loreto, July 14, 1929, *Llewellyn Williams* 1391 (Herb. Field Mus. No. 604,636, type). Punchana, near Iquitos, *Williams*

1337. Near Iquitos, Williams 1524. In woods, Iquitos, 100 m., Killip & Smith 26926, 27208, 27019, 27244. Santa Rosa, lower Río Huallaga below Yurimaguas, Dept. Loreto, 135 m., in dense forest, Killip & Smith 28792, 28746.

Very like *P. involucreta* Sw., one of the widely distributed species of tropical America. In that, however, the headlike clusters of flowers form a much-reduced, headlike or umbel-like inflorescence, distinct from the pinnate or racemose inflorescence of the present plant.

***Psychotria yapasensis*, sp. nov.**—Frutex vel arbor 2.5–6 m. alta omnino glabra, ramulis crassiusculis obtuse tetragonis, novellis subcompressis, internodiis valde elongatis; stipulae erectae persistentes in vaginam 1.5–3 mm. longam truncatam connatae, vagina in lacinias 4 triangulares 1–2 mm. longas acutas desinente; folia breviter petiolata opposita, petiolo crassiusculo 1–2 cm. longo; lamina coriacea vel subcoriacea elliptico-ovata, oblongo-elliptica vel rare anguste oblonga, 8.5–24 cm. longa, 4–10 cm. lata, obtusa vel acuta, interdum abrupte breviterque acuminata, basi acuta vel subobtusata, interdum basin versus angustata, supra in sicco fusca, costa venisque prominentibus, venulis prominulis vel fere obsoletis, subtus pallidior, costa gracili elevata, nervis lateralibus utroque latere 13–16 obliquis, angulo lato abeuntibus, gracilibus, prominentibus, leviter curvis vel fere rectis, prope marginem conjunctis, venulis prominulis arcte reticulatis, margine anguste incrassato; inflorescentia terminalis late pyramidalipaniculata magna, 5–12 cm. longe pedunculata, 12–16 cm. longa, 12–18 cm. lata, laxe multiflora, ramis oppositis patentibus vel subreflexis elongatis gracilibus angulatis, bracteis basalibus oblongis vel anguste lanceolatis obtusis foliaceis c. 1.5 cm. longis, superioribus latioribus et multo brevioribus, bracteis ad basin florum minutis acutis, floribus parvis in cymulas parvas paucifloras laxas dispositis arcte sessilibus; hypanthium latissime turbinatum vix 0.5 mm. longum, calyce 0.4 mm. longo hypanthio latiore truncato vel minute denticulato; corolla lutescens extus glabra in alabastro apice obtusa et minute 5-tuberculata, 7 mm. longa, tubo crassiusculo superne sensim dilatato ore 2 mm. lato, lobis 5 suberectis triangulari-ovatis obtusis 1.5 mm. longis intus glabris; stylus gracilis glaber.—Peru: In dense forest, Pichis Trail, Yapas, Dept. Junín, alt. 1,350–1,600 m., June 28–29, 1929, E. P. Killip and A. C. Smith 25461 (Herb. Field Mus. No. 607,712, type), 25567.

In general appearance the present species simulates closely the Bolivian *Psychotria luxurians* Rusby, but in the latter the leaves are thin, the inflorescence is pubescent, and the corolla is much shorter.

***Psychotria huantensis*, sp. nov.**—Frutex 3–3.5 m. altus, ramulis gracilibus obtuse tetragonis olivaceis sparse hirtellis, internodiis elongatis; stipulae puberulae suberectae persistentes in vaginam truncatam 1.5–2.5 mm. longam connatae, vagina in lobos 2 lanceolato-triangulares 4–5 mm. longos attenuatos interdum apice bifidos

desinente; folia breviter petiolata opposita, petiolo 1-1.5 cm. longo hispidulo gracili; lamina tenuiter coriacea oblonga vel lanceolato-oblonga, c. 16 cm. longa et 5.5 cm. lata, apicem versus breviter angustata, apice breviter cuspidata, basi subobtusata vel rotundata, anguste cartilagineo-marginata, supra laete viridis, glabra, in statu juvenili raphidibus paucis brevibus pallidis notata, costa venisque non elevatis, subtus vix pallidior, ad venas sparse hispidula vel fere glabra, costa gracili elevata, nervis lateralibus utroque latere c. 9 obliquis, angulo lato adscendentibus, gracilibus, prominentibus, valde arcuatis, in marginem desinentibus, venulis prominulis laxe reticulatis; inflorescentia terminalis anguste pyramidali-paniculata 4 cm. longe pedunculata, laxa multiflora, c. 13 cm. longa et 10 cm. lata, ramis plerumque oppositis patentibus vel subreflexis gracilibus rectis dense pilosulis, bracteis inferioribus lineari-subulatis 1 cm. longis puberulis, superioribus brevioribus, ramulis cymarum valde elongatis gracilibus secundifloris, floribus sessilibus bracteolatis; hypanthium brevissimum puberulum, calyce vix 0.5 mm. longo hypanthio latiore truncato vulgo disco tumido brevior; corolla non visa; fructus subglobosus 4 mm. longus hirtellus basi et apice rotundatus, pyrenis 2 dorso acute 5-costatis facie interiore profunde excavatis.—Peru: In dense woods, Estrella, between Huanta and Río Apurímac, Dept. Ayacucho, alt. 500 m., May, 1929, E. P. Killip and A. C. Smith 22633 (Herb. Field Mus. No. 607,870, type).

This plant is an ally of *Psychotria patens* Sw., but it differs strikingly from that species in its broader and strongly pubescent inflorescence.

Psychotria limitanea, sp. nov.—Frutex, ramulis teretibus viridibus glabris; stipulae magnae suberectae viridescens persistentes in vaginam truncatam 2 mm. longam connatae, vagina in lacinias 4 lineari-subulatas 2 cm. longas glabras desinente; folia brevissime petiolata opposita, petiolo crasso glabro 7 mm. longo; lamina tenuiter coriacea anguste cartilagineo-marginata anguste oblonga, c. 26 cm. longa et 8 cm. lata, acuminata, basi rotundata, glabra, supra laete viridis, costa venisque elevatis, subtus paullo pallidior, glabra, costa gracili elevata, nervis lateralibus utroque latere c. 15 obliquis, angulo lato adscendentibus, leviter arcuatis, prominentibus, gracilibus, in marginem desinentibus, nervulis prominulis laxe reticulatis; inflorescentia terminalis anguste cylindraneo-paniculata 9 cm. longe pedunculata, laxa multiflora, c. 20 cm. longa et basi 4 cm. lata, pedunculo hispidulo, ramis brevibus plerumque plus minusve reflexis dense hispidulo-puberulis basi paullo incrassatis, bracteis nullis, floribus sessilibus in cymulas dispositis, ramulis interdum subelongatis et secundifloris; calyx ad apicem drupae persistens minutus subtruncatus; fructus depresso didymo-globosus glaber 4 mm. longus et 5 mm. latus, pyrenis 2 vel abortu saepe 1 dorso elevato-nervosis facie interiore profunde excavatis.—In forest, La Victoria on the Amazon River, Dept. Loreto, August 31, 1930, Llewellyn Williams 3006 (Herb. Field Mus. No. 604,434, type).

This plant is clearly a relative of *P. patens* Sw., differing from it in the very large leaves with numerous veins and rounded bases, and in the very long and narrow, pubescent inflorescence.

***Psychotria loretensis*, sp. nov.**—Frutex 2.5–4.5 m. altus ubique praeter inflorescentiam glaber, ramulis gracilibus teretibus viridibus vel olivaceis, internodiis elongatis; stipulae viridescentes persistentes et interdum aliquid induratae in vaginam 1–2 mm. longam subtruncatam connatae, vagina in lacinias 4 subulatas erectas rigidas 3–4 mm. longas desinente; folia petiolata opposita, petiolo gracili vel crassiusculo 0.7–2.5 cm. longo; lamina coriacea vel subcoriacea conspicue cartilagineo-marginata oblonga, lanceolato-oblonga vel rare oblongo-elliptica, 10–24 cm. longa, 3–8 cm. lata, sensim vel abrupte longiacuminata, acumine attenuato angusto, basi obtusa vel acuta, supra viridis, costa venisque prominentibus, subtus paulo pallidior, costa crassiuscula elevata, nervis lateralibus utroque latere 8–13 angulo lato abeuntibus, prominentibus, gracilibus, leviter curvis vel fere rectis, in marginem desinentibus, venulis prominulis plerumque transversis et parallelis laxe reticulatis; inflorescentia terminalis cylindraceo-paniculata vel anguste pyramidali-paniculata erecta 5–18 cm. longa et 3–9 cm. lata, laxe multiflora, graciliter 3–12 cm. longe pedunculata, bracteis nullis, ramis brevibus gracilibus patentibus vel saepe reflexis, glabris vel minute puberulis, cymis laxis e cymulis parvis paucifloris compositis, ramulis interdum aliquid elongatis et secundifloris, floribus arcte sessilibus; hypanthium glabrum breviter cylindraceum 0.7 mm. longum, calyce 0.4 mm. longo profunde 5-lobulato, lobulis obtusis vel rotundatis minutissime ciliolatis; corolla lutea extus glabra in alabastro apice rotundata, 5 mm. longa, tubo gracili superne dilatato in fauce glabro, lobis 5 suberectis ovali-ovatis apice rotundatis tubo duplo brevioribus; antherae anguste oblongae subexsertae 1–1.2 mm. longae; fructus aurantiacus subglobosus glaber 4–5 mm. diam., basi et apice rotundatus, pyrenis 2 dorso leviter obtuso-costatis vel fere laevibus facie interiore profunde excavatis.—Peru: In woods, Iquitos, Dept. Loreto, alt. 100 m., August 3–11, 1929, *E. P. Killip and A. C. Smith 27482* (Herb. Field Mus. No. 607,573, type), 26988. In forest between Río Nanay and Río Napo, June 6, 1929, *Williams 720*. In sandy soil, edge of jungle, Timbuchi, on the Río Nanay, Dept. Loreto, *Williams 1016*. In forest north of Río Nanay, Dept. Loreto, *Williams 856*. In dense forest, Puerto Bermúdez, Dept. Junín, 375 m., *Killip & Smith 26561*. Mishuyacu, near Iquitos, in dense forest, *Killip & Smith 29862*. Balsapuerto, lower Río Huallaga Basin, 350–550 m., in dense forest, *Killip & Smith 28542, 28398* (U. S. Nat. Herb.), 28388, 28606, 28405. Pichis Trail, Santa Rosa, Dept. Junín, 625–900 m., in dense forest, *Killip & Smith 26167*.

A close ally of *P. patens* Sw., which is widely distributed in tropical America, but distinguished from that species by the larger and broader inflorescence, and especially by the much thicker and larger leaves with conspicuous cartilaginous margins.

***Psychotria racemifera* Standl. Field Mus. Bot. 8: 71. 1930.**

The known range of this recently described species is greatly extended by the two following specimens: Peru: In forest, Timbuchi, on the Río Nanay, Dept. Loreto, June 25, 1929, *Llewellyn Williams* 952.—Brazil: In forest, Manaos, State of Amazonas, July 31, 1900, *E. Ule* 5121 (Herb. Berol.); a shrub 20–100 cm. high; flowers white; fruit blue.

***Psychotria hospitalis*, sp. nov.**—Ramuli graciles teretes sordide fusci vel olivacei glabri, internodiis 2–4 cm. longis; stipulae caducae 5 mm. longae late triangulari-ovatae acutae ferrugineae glabrae, dorso acute costatae; folia breviter petiolata opposita, petiolo crassiusculo 3–7 mm. longo glabro; lamina crasse membranacea in sicco nigrescens glabra oblonga vel obovato-oblonga 7–11 cm. longa, 2–4.5 cm. lata, abrupte acuminata vel longe acuminata, acumine angusto interdum fere lineari acuto saepe subfalcato, basin versus sensim angustata, basi ipsa acuta vel attenuata, costa supra prominula, venis non elevatis, subtus fere concolor, secus costam domatiis magnis conspicuis elongatis instructa, costa gracili elevata, nervis lateralibus utroque latere c. 13 obliquis, plerumque angulo semirecto adscendentibus, gracilibus, prominentibus, leviter curvis, prope marginem conjunctis, venulis obscuris; inflorescentia terminalis vel pseudo-axillaris cymoso-paniculata 3–4 cm. longe pedunculata, 2.5–3 cm. longa et aequilata, laxe multiflora, ramis brevibus glabris, basalibus verticillatis, superioribus oppositis, divaricatis, angulatis, bracteis minutis saepe deciduis late ovatis vel triangularibus acutis, floribus aggregatis sessilibus vel 1 mm. longe pedicellatis; calyx ad apicem drupae persistens glaber late campanulatus fere ad medium 5-dentatus, dentibus ovatis acutis erectis; fructus globoso-ellipsoidalibus 6 mm. longus glaber, basi acutiusculus, apice rotundatus, pyrenis 2 dorso obtuse 5-costatis facie interiore planis.—Peru: In forest along the Río Nanay, Dept. Loreto, June 17, 1929, *Llewellyn Williams* 845 (Herb. Field Mus. No. 604,678, type).

The species belongs to the *Mapouria* group. It is noteworthy for the unusually large and conspicuous shelters for parasites occurring abundantly along the costa. These are elongated and narrow, with their openings toward the base of the leaf.

***Psychotria calochlamys*, sp. nov.**—Frutex 1–2-metralis, ramulis gracilibus teretibus viridibus vel olivaceis glabris vel minutissime puberulis, internodiis valde elongatis; stipulae subpersistentes erectae virides vel rubrotinctae liberae glabrae vel minute puberulae fere ad basin bifidae, laciniis 13–28 mm. longis lanceolatis vel lineari-lanceolatis longe angustaeque attenuatis, saepe subfalcatis, nervulosis; folia breviter petiolata opposita, petiolo gracili vel crassiusculo 3–10 mm. longo glabro vel minute puberulo; lamina papyracea vel subcoriacea anguste lanceolato-oblonga, lanceolato-oblonga, elliptico-oblonga vel rare ovata, 7.5–20 cm. longa, 2.5–7 cm. lata, longe vel longissime

acuminata, acumine angusto longe attenuato interdum subfalcato, basi acuta, supra viridis, glabra, costa venisque saepe pallidis vix prominulis, subtus paullo pallidior, glabra vel ad costam minutissime puberula, costa gracili elevata, nervis lateralibus utroque latere c. 15 obliquis, angulo lato adscendentibus, gracilibus, prominentibus, saepe valde arcuatis, juxta marginem conjunctis, venulis prominulis laxè reticulatis; inflorescentia terminalis depresso-cymoso-paniculata, 2–6 cm. lata et fere aequilonga, basi nuda vel interdum bracteis elongatis 1 vel 2 elongatis fulcrata, basi vulgo trichotoma, longe pedunculata, ramis brevibus plus minusve fastigiatis valde adscendentibus sparse minuteque puberulis, bracteis roseis vel purpureis in sicco rubris vel rubescentibus lanceolatis vel oblongis flores fere aequantibus, plerumque 1–1.5 cm. longis, acutis vel acuminatis, glabris vel sparse minuteque puberulis, persistentibus, floribus sessilibus vel subsessilibus in cymulas parvas densifloras dispositis, interdum secundis; hypanthium late turbinatum glabrum 1 mm. longum, calyce late campanulato glabro 0.6 mm. longo breviter et irregulariter dentato; corolla rosea extus glabra 12 mm. longa, tubo gracili superne vix dilatato, lobis suberectis triangulari-oblongis 2–2.5 mm. longis obtusis intus glabris; stylus gracillimus glaber; fructus intense purpureus ovalis 6–7 mm. longus glaber, basi rotundatus, apice late rotundatus vel depressus, pyrenis 2 dorso acute 5-costatis, facie interiore longitrorsum sulcatis. —Peru: Santa Ana, on the upper Río Nanay, Dept. Loreto, July 7, 1929, *Llewelyn Williams* 1226 (Herb. Field Mus. No. 604,620, type). Near Iquitos, *Williams* 1502. In woods, Iquitos, 100 m., *Killip & Smith* 27194, 27000, 27002. Río Nanay, Dept. Loreto, edge of forest, *Williams* 752. Timbuchi, on the Río Nanay, in water in forest, *Williams* 1042, 1041. Along the Río Nanay, in forest, *Williams* 839. Wooded banks of the Río Itaya, above Iquitos, 110 m., *Killip & Smith* 29387, 29286 (U. S. Nat. Herb.).

Vernacular names, "chirapa shacha" and "shuturi."

This is one of those plants which may be referred almost equally well to either *Psychotria* or *Cephaelis*, but apparently it is referable to Mueller's section *Inundatae* of the subgenus *Eupsychotria*. It is related to some of the forms which have been referred to *P. bracteata* DC., but distinguishable by the numerous broad and vividly colored bracts. The shrub must be an exceptionally handsome one when growing.

***Psychotria Williamsii*, sp. nov.**—Frutex 2–2.5 m. altus, ramulis gracilibus teretibus vel subcompressis, novellis olivaceis vel viridibus, internodiis valde elongatis; stipulae virides erectae persistentes in vaginam latam truncatam 1–1.5 mm. longam connatae, vagina in lacinias 4 subulato-lineares 4–5 mm. longas rigidas minute scaberulas desinente; folia opposita sessilia vel tantum 1–2 mm. longe petiolata; lamina chartacea anguste oblonga vel lanceolato-oblonga 12.5–22 cm. longa, 3–6 cm. lata, longissime sensimque acuminata, acumine angusto longe attenuato, basi rotundata et breviter cordata, glabra,

supra viridis, costa venisque prominulis, subtus paullo pallidior, costa gracili elevata rubescente, nervis lateralibus utroque latere c. 12 obliquis, angulo acuto adscendentibus, gracilibus, prominentibus, fere rectis, marginem attingentibus, venulis prominulis laxe reticulatis; inflorescentia terminalis 4.5 cm. longe pedunculata, depressocymosa, fere capituliformis, c. 3 cm. longa et 5 cm. lata, basi brevissime digitato-ramosa, ramis primariis basi nudis 2–5 mm. tantum longis crassis glabris vel minute puberulis, bracteis intense purpureis elliptico-oblongis, lanceolatis vel oblanceolatis, 1.5–2.5 cm. longis, 6–10 mm. latis, acutis vel acuminatis, interdum cuspidato-acuminatis, minute puberulis, scaberulis vel glabratibus, nervosis; flores in cymulas parvas paucifloras dispositi, sessiles vel 1 mm. longe pedicellati; hypanthium late turbinatum 0.5 mm. longum minute puberulum, calyce brevissimo 0.5 mm. longo brevissime lobulato, lobis late rotundatis minute puberulis; corolla pallide caerulea extus minute puberula in alabastro versus apicem sensim angustata et 8 mm. longa, tubo gracili superne sensim dilatato, lobis tubo multo brevioribus; fructus globosus 5 mm. longus basi et apice rotundatus glaber, pyrenis 2 dorso fere laevibus.—Peru: In forest, Río Nanay, Dept. Loreto, June 15, 1929, *Llewelyn Williams* 760 (Herb. Field Mus. No. 604,664, type), 763. Peña Blanca, on Río Itaya, Dept. Loreto, 110 m., September 19, 1929, *Killip & Smith* 29648; growing in dense forest.

The plant is a member of Mueller's section *Bracteosae* of the subgenus *Eupsychotria* (see Mart. Fl. Bras. 6^b: 273. 1881). From all the species of that group it differs prominently in the long and narrow, sessile leaves with broad bases. It must be a showy species when growing because of the numerous large and brilliantly colored bracts.

***Psychotria cuspidulata* (Krause), comb. nov.** *Cephaelis cuspidulata* Krause, Notizbl. Bot. Gart. Berlin 8: 102. 1922.

***Psychotria rhodothamna*, sp. nov.**—Frutex vel arbuscula 1–6-metralis praeter inflorescentiam omnino glabra, ramulis gracilibus teretibus, vetustioribus olivaceis, novellis interdum subcompressis in sicco plus minusve rubrotinctis, internodiis plerumque elongatis; stipulae erectae arcte adpressae persistentes 2–3 mm. longae in vaginam brevissimam truncatam connatae, vagina in lobos 2 breves late ovato-triangulares obtusos desinente; folia petiolata opposita, petiolo gracili 7–20 mm. longo; lamina crasse membranacea lanceolato-oblonga usque ad oblongo-elliptica 9–19 cm. longa, 3–8 cm. lata, longe cuspidato-acuminata, acumine angusto interdum fere lineari longe attenuato apice obtuso saepe subfalcato, basi acuta vel breviter acuminata, interdum abrupte contracta et breviter decurrens, supra laete viridis, costa venisque ut interdum quoque venuli prominentibus vel prominulis, subtus vix pallidior, interdum praesertim ad nervos rubrotincta, costa gracili elevata, nervis lateralibus utroque latere c. 8 subobliquis vel obliquis, angulo lato vel angusto adscendentibus, gracilibus, prominentibus, leviter arcuatis, prope marginem

conjunctis, venulis paucis prominulis laxè reticulatis; inflorescentia terminalis depresso-cymosa 0.5–2 cm. longè pedunculata 1.5–3 cm. lata dense multiflora, pedunculo glabro vel minutissime puberulo, ramis fastigiatis suberectis vel interdum subpatentibus, brevibus, basi non bracteatis, minute puberulis vel glabris, in sicco rubrotinctis, bracteolis obsoletis, floribus sessilibus vel crasse 1–2 mm. longè pedicellatis interdum subsecundis; hypanthium cylindraceo-turbinatum c. 0.8 mm. longum glabrum vel minutissime puberulum, calyce 0.5–0.8 mm. longo hypanthio multo latiore truncato vel obsolete 5-denticulato, disco tumido; corolla alba vel ochroleuca in alabastro apice minutissime 5-tuberculata vel fere nuda extus pulverulacea vel fere glabra, tubo gracili elongato basi saepe arcuato vel subtorto 8–14 mm. longo, superne non vel vix dilatato, 1–1.5 mm. lato, lobis 5 triangulari-oblongis 2.5–3 mm. longis obtusis adscendentibus intus glabris; antherae albae subexsertae lineares 2.5 mm. longae; fructus ut videtur caeruleus didymo-globosus glaber 5–6 mm. latus, laevis, basi et apice late rotundatus.—Peru: In woods, Iquitos, Dept. Loreto, alt. 100 m., August 3–11, 1929, *E. P. Killip and A. C. Smith 27115* (Herb. Field Mus. No. 607,525, type), 26925, 27344. Pebas, on the Amazon River, Dept. Loreto, in forest, July, 1929, *Williams 1664, 1678, 1591*. Pisco, on the Río Nanay, Dept. Loreto, in forest, *Williams 1286*. San Antonio, on Río Itaya, Dept. Loreto, 110 m., in dense forest, *Killip & Smith 29341, 29334*.—Bolivia: Buena Vista, Dept. Santa Cruz, March 4, 1915, *Steinbach 910* (Herb. Berol.).

A member of the subgenus *Psychotriopsis*, section *Divaricatae*, as defined by Mueller in the *Flora Brasiliensis*. It must be related to *P. urophylla* Schlecht., described from the upper Amazon, but in that the corolla is only 6.5 mm. long. *Psychotria rhodothamna* resembles closely *P. cuspidulata* (Krause) Standl., but in that species the corolla is pilose with spreading hairs.

***Psychotria compta*, sp. nov.**—Suffrutex vel frutex 0.6–3.5 m. altus simplex vel ramosus, interdum basi decumbens et radicans, praeter inflorescentiam omnino glaber, ramulis crassis vel crassiusculis teretibus, vetustioribus viridibus vel olivaceis, novellis in sicco interdum rubrotinctis et ad nodos plus minusve constrictis, internodiis valde elongatis; stipulae erectae persistentes arcte adpressae c. 7 mm. longae in vaginam brevem truncatam c. 2 mm. longam connatae, vagina in lobos 4 remotos late ovato-triangulares obtusos desinente; folia petiolata opposita, petiolo gracili vel crassiusculo 1–2.5 cm. longo; lamina firme membranacea late elliptica vel ovato-elliptica, rarius oblongo-ovata, 13–26 cm. longa, 5.5–15 cm. lata, apice acuta usque ad rotundata et abrupte cuspidato-acuminata, rarius longè acuminata, acumine angusto interdum fere lineari longè attenuato interdum subfalcato, basi acuta vel obtusa, interdum abrupte contracta et breviter decurrens, supra laete viridis, costa venisque prominentibus, subtus paullo pallidior, costa gracili vel latiuscula elevata, nervis lateralibus utroque latere c. 12 angulo lato

interdum fere recto abeuntibus, gracilibus, prominentibus, leviter curvis vel fere rectis, prope marginem conjunctis, venulis prominulis laxe reticulatis; inflorescentia terminalis crasse 1-3.5 cm. longe pedunculata, erecta, cymoso-paniculata, late ovoidea, in anthesi c. 5 cm. longa et 6 cm. lata, ramis crassis non bracteatis basi dilatatis saepe compressis oppositis vel alternis divaricatis vel subreflexis, in statu fructifero interdum valde reflexis, glabris vel minute pulverulaceis, ramis plus minusve racemose dispositis, floribus numerosis in cymulas parvas densas paucifloras dispositis, plerumque sessilibus vel pedicellis roseis crassis vix 1 mm. longis stipatis; corolla ochroleuca extus minute puberula in alabastro apice rotundata, tubo crassiusculo 5-8 mm. longo superne paullo dilatato et 3 mm. lato, lobis 5 triangulari-oblongis obtusis adscendentibus vel patentibus 2.5-3 mm. longis intus glabris; antherae ochroleucae breviter exsertae 2 mm. longae oblongo-lineares; fructus pallide caeruleus vel albus didymo-globosus 6-9 mm. latus basi et apice late rotundatus, pyrenis 2 facie interiore convexis dorso laevibus.— Peru: In woods, Yurimaguas, lower Río Huallaga, Dept. Loreto, alt. 135 m., August 22-September 9, 1929, *E. P. Killip and A. C. Smith 29098* (Herb. Field Mus. No. 607,750, type), 27590, 29038, 27968. Schunke Hacienda, above San Ramón, Dept. Junín, 1,400-1,700 m., *Killip & Smith 24584, 24601* (U. S. Nat. Herb.); growing in dense forest. Pichis Trail, Eneñas, Dept. Junín, 1,600-1,900 m., in dense forest, *Killip & Smith 25633*. Río Apurímac Valley, near Kimpitiriki, Dept. Ayacucho, 400 m., in dense forest, *Killip & Smith 22920* (U. S. Nat. Herb.), 22903 (U. S. Nat. Herb.).

The plant is nearly related to *P. rhodothamna* Standl., the latter differing in its small, dense, compact, cymose inflorescence.

Psychotria Albert-Smithii, sp. nov. — Frutex vel arbor 2.5-7.5 m. alta praeter inflorescentiam omnino glabra, ramulis gracilibus teretibus viridibus vel olivaceis, internodiis elongatis; stipulae parvae erectae persistentes in vaginam truncatam 1-1.5 mm. longam connatae, vagina in lacinias 4 remotas 1-2 mm. longas lineari-subulatas rigidas desinente; folia breviter petiolata opposita, petiolo gracili 1-1.5 cm. longo; lamina papyracea elliptico-oblonga 10-19 cm. longa, 4-7 cm. lata, abrupte acuminata vel cuspidato-acuminata, acumine angusto attenuato interdum subfalcato, basi acuta et plus minusve inaequalis, saepe versus basin breviter angustata, supra laete viridis, costa venisque prominulis vel prominentibus, subtus pallidior, costa gracili elevata, nervis lateralibus utroque latere c. 9 angulo lato abeuntibus, gracillimis, prominentibus, leviter arcuatis, prope marginem conjunctis, venulis prominulis vel obscuris laxe reticulatis; inflorescentia terminalis cymuloso-umbelliformis 3-8 mm. longe pedunculata, e cymulis paucis dense paucifloris 1-5 mm. longe pedunculatis radiatim dispositis composita, interdum internodio 1 brevi adjecto, ramulis glabris vel sparse minuteque puberulis, bracteis ad basin ramulorum lanceolato-subulatis 1-1.5 mm. longis, ceteris minutis vel obsoletis, floribus dense congestis arcte sessilibus; hypan-

thium turbinato-cylindraceum 1-1.2 mm. longum glabrum, calyce hypanthio latiore 0.6 mm. longo glabro 5-denticulato, dentibus acutis: corolla minuta viridescens roseotincta extus glabra in alabastro apice late rotundata, c. 2 mm. longa, fauce dense albo-barbata, lobis oblongis obtusis tubo plus quam duplo longioribus; antherae breves oblongae subexsertae; fructus ellipsoidalis 8 mm. longus intense ruber glaber, basi acutiusculus, apice rotundatus, pyrenis 2 dorso obtuse 5-costatis facie interiore planis.—Peru: In dense forest, Soledad, on the Río Itaya, Dept. Loreto, alt. 110 m., September 20-22, 1929, *E. P. Killip and A. C. Smith 29766* (Herb. Field Mus. No. 607,482, type), *29782, 29720*. San Antonio, on Río Itaya, 110 m., in dense forest, *Killip & Smith 29462, 29411* (U. S. Nat. Herb.).

It is difficult to suggest a relationship for this well-marked species. Its most striking character is found, probably, in the diminutive corolla.

Psychotria microbotrys Ruiz in herb., sp. nov.—Frutex vel arbor 1-6-metralis praeter inflorescentiam omnino glabra, ramulis gracilibus subteretibus laevibus fusco-olivaceis, internodiis elongatis vel rarius abbreviatis; stipulae persistentes virides vel brunnescentes erectae 14-17 mm. longae tenues liberae fere ad basin bifidae, laciniis lanceolato-triangularibus longe acuminatis; folia petiolata opposita, petiolo crassiusculo 1-2 cm. longo; lamina membranacea elliptico-oblonga usque ad late elliptica 14-24 cm. longa, 7-11 cm. lata, acuta, basi acuta vel breviter angustata, rarius fere rotundata et abrupte contracta, supra laete viridis, costa venisque prominulis, subtus paullo pallidior, costa gracili elevata, nervis lateralibus utroque latere c. 12 angulo lato interdum fere recto abeuntibus, gracillimis, prominulis, valde arcuatis, marginem attingentibus, nervulis prominulis laxè reticulatis; inflorescentia terminalis late thyrsoido-paniculata, late ovoidea, graciliter 2-6 cm. longe pedunculata, erecta, laxè multiflora, in anthesi 2-5 cm. longa et fere aequilata, in fructu usque ad 7 cm. lata, ramis gracilibus patentibus vel late adscendentibus, in fructu interdum subreflexis, basi paullo incrassatis, glabris vel sparse minuteque puberulis, bracteis linearibus vel subulatis glabris usque ad 6 mm. longis, floribus interdum subsecundis sessilibus vel 1 mm. longe pedicellatis; hypanthium cylindraceum glabrum 0.8 mm. longum, calyce vix 0.5 mm. longo lobulato, lobulis late rotundatis; corolla extus glabra alba 2.5 mm. longa in alabastro apice rotundata, tubo crasso superne vix dilatato, lobis oblongis tubum aequantibus; stylus 2 mm. longus glaber; fructus glaber subglobosus 3 mm. longus, basi et apice rotundatus, pyrenis 2 dorso acute 5-costatis, facie interiore profunde concavis et excavatis.—Peru: In forest, La Victoria on the Amazon River, August 31, 1929, *Llewelyn Williams 2983* (Herb. Field Mus. No. 608,877, type). In Peruviae Andium nemoribus, *Ruiz* (photo. of specimen in herb. Berol.). In dense forest, Pichis Trail, Santa Rosa, Dept. Junín, 625-900 m., *Killip & Smith 26173*.—Venezuela: In forest, Motoekorunya, Río Canaracuni, April

13, 1912, *Koch-Grünberg 21* (Herb. Berol.).—Bolivia: San Carlos, region of Mapiiri, 850 m., *Buchtien 1467* (Herb. Berol.), *1466* (Herb. Berol., U. S. Nat. Herb.).

Although this species has an unusually broad area of distribution, it has been impossible to find any published name which seems to relate to it. The recently collected specimens evidently are identical with the Peruvian specimen existing in the Berlin herbarium, whose label bears the unpublished name of Ruiz employed here.

Psychotria microbotrys is not closely related to any other species of which material is available. In habit it suggests rather strikingly various species of *Palicourea*, but in flower structure it appears to be better referable to *Psychotria*. The large stipules, thyriform panicle, and very small fruits offer distinctive characters.

***Psychotria nigricans*, sp. nov.**—Frutex vel arbuscula, ramulis crassiusculis teretibus fuscis dense minuteque puberulis, internodiis elongatis; stipulae erectae persistentes fere ad basin bifidae, extus dense et minute puberulae, laciniis triangulari-lanceolatis attenuatis; folia breviter petiolata opposita, petiolo gracili 1–2.5 cm. longo dense et sordide puberulo; lamina membranacea in sicco nigrescens lanceolata, lanceolato-oblonga vel elliptico-oblonga, 12–24 cm. longa, 4–9 cm. lata, longe et sensim vel abrupte acuminata, acumine angusto attenuato acuto interdum falcato, basin versus longe vel breviter angustata, basi ipsa acuta, supra glabra vel ad costam minute puberula, costa venisque prominentibus, subtus ad costam venasque puberula vel breviter pilosula, costa gracili elevata, nervis lateralibus utroque latere c. 19 obliquis, angulo latiusculo adscendentibus, gracillimis, prominentibus, leviter curvis, juxta marginem conjunctis, nervulis paucis et inconspicuis laxe reticulatis; inflorescentia terminalis 0.5–3 cm. longe pedunculata, densissime multiflora, e cymulis c. 5–9 capituliformibus breviter pedunculatis composita, in anthesi c. 2 cm. longa et aequilata, in statu fructifero laxior et 4 cm. longa et lata, ramis crassis densissime puberulis vel pilosulis patentibus vel adscendentibus, bracteis foliaceis lanceolatis vel lineari-lanceolatis plerumque 5–8 mm. longis subadpressis glabris vel minute puberulis villosulo-ciliatis, bracteolis numerosissimis linearibus et brevioribus dense longeque villosulo-ciliatis, floribus arcte sessilibus; calyx ad apicem drupae persistens 1 mm. longus puberulus 5-dentatus; fructus ellipsoideus sordide puberulus 7–8 mm. longus et 6 mm. latus, pyrenis 2 dorso obtuse 5-costatis facie interiore planis.—Peru: In forest, Pebas, on the Amazon River, Dept. Loreto, July 23, 1929, *Llewellyn Williams 1608* (Herb. Field Mus. No. 604,594, type). Also, from the same locality, *Nos. 1569, 1777, 1621, 1570*.

Vernacular name, "sonia."

***Psychotria pichisensis*, sp. nov.**—Frutex vel arbor usque ad 7.5 m. altus, ramulis crassiusculis teretibus brunnescentibus glabris, internodiis elongatis; stipulae caducae oblongae acutae 6 mm. longae

tenuis brunnescentes glabrae et minute ciliolatae; folia breviter petiolata opposita, petiolo 8-14 mm. longo crassiusculo ciliolato; lamina chartacea elliptico-oblonga vel oblanceolata-oblonga 12-17 cm. longa, 4-5.5 cm. lata, sensim vel abrupte acuminata vel longi-acuminata, acumine angusto longe attenuato acuto interdum subfalcato, basin versus longe sensimque angustata, glabra, supra in sicco cinereo-viridis, costa venisque vix elevatis, subtus concolor, costa crassiuscula elevata, nervis lateralibus utroque latere 11-13 angulo lato abeuntibus, gracillimis, prominentibus, pallidis, leviter arcuatis, prope marginem conjunctis, nervulis prominulis vel obscuris laxe reticulatis; inflorescentia terminalis late pyramidalis-paniculata 7-12 cm. longa et 10-17 cm. lata, 3-4 cm. longe pedunculata, laxe multiflora, ramis primariis patentibus vel subreflexis oppositis sparse minuteque pilosulis vel fere glabris gracilibus, bracteis caducis, floribus in cymulas laxas paucifloras paniculatas dispositis, pedicellis crassiusculis 2-4 mm. longis minute puberulis; calyx ad apicem baccae persistens annuliformis 0.5 mm. longus truncatus vel remote denticulatus; fructus immaturus subglobosus 5 mm. longus glaber, basi acutiusculus, apice rotundatus, pyrenis 2 dorso obtuse 5-costatis facie interiore planis.—Peru: In dense forest, Pichis Trail, San Nicolás, Dept. Junín, alt. 1,100 m., July 4-5, 1929, *E. P. Killip and A. C. Smith 25993* (Herb. Field Mus. No. 607,622, type). Between Ayupizú and Santa Rosa, Pichis Trail, 650 m., in dense forest, *Killip & Smith 26138*.

The plant has no outstanding characters, but it is probably a relative of *P. alba* R. & P., differing conspicuously from that species in its broad and laxly flowered inflorescence.

Psychotria juninensis, sp. nov.—Frutex 1.5-2 m. altus omnino glaber, ramulis gracillimis teretibus olivaceis vel ferrugineis, internodiis elongatis; stipulae deciduae, non visae; folia graciliter petiolata opposita, petiolo 7-11 mm. longo; lamina membranacea anguste pallido-marginata breviter oblongo-elliptica 7-9.5 cm. longa, 2.2-3.5 cm. lata, abrupte longeque caudato-acuminata, acumine angusto interdum fere lineari plerumque 1.5-2 cm. longo attenuato acuto, basi acuta, supra viridescens, costa venisque vix elevatis, subtus fere concolor, in axillis costarum saepe conspicue domatiata, costa gracili elevata, nervis lateralibus utroque latere c. 7 angulo lato abeuntibus, gracillimis, prominulis, arcuatis, prope marginem conjunctis, nervulis obscuris laxe reticulatis; inflorescentia terminalis cymoso-corymbosa gracillime 3.5 cm. longe pedunculata, laxe pauciflora, c. 2.5 cm. alta et 5 cm. lata, basi trichotoma, ramis primariis subpatentibus gracillimis, bracteis minutis triangularibus acutis persistentibus vix 0.5 mm. longis, floribus in cymulas paucifloras dispositis, pedicellis gracilibus rectis c. 3 mm. longis; hypanthium late turbinatum 0.6 mm. longum, calyce lato truncato vel remote 5-denticulato hypanthium fere aequante; corolla viridi-alba in alabastro 3 mm. longa extus glabra apice apiculata, lobis acutis tubo fere duplo longioribus.—Peru:

Puerto Bermúdez, Dept. Junín, alt. 375 m., in dense forest, July 14-17, 1929, *E. P. Killip and A. C. Smith 26525* (Herb. Field Mus. No. 607,546, type).

The plant bears some resemblance to *P. hylocharis* Standl., described from Colombia. It is related also to *P. tenuicaulis* Krause, a native of Peru. The latter differs in its short-petioled leaves with broad bases and in the presence of pubescence on the stems and leaves.

***Psychotria candelabrum*, sp. nov.**—Frutex, ramulis crassiusculis in sicco striatis viridibus dense velutino-pilosulis, internodiis elongatis; stipulae persistentes virides suberectae in vaginam truncatam 1-1.5 mm. longam connatae, vagina in lobos 4 triangulares acutos dense pilosulos 4-5 mm. longos desinente; folia breviter petiolata opposita, petiolo crassiusculo 1.5 cm. longo dense et minutissime pilosulo; lamina firme membranacea obovato-elliptica 20-24 cm. longa, 9-10 cm. lata, apice acuta vel obtusiuscula et caudato-acuminata, acumine fere 2 cm. longo triangulari longe attenuato, basin versus cuneatim angustata, supra laete viridis, ad costam venasque dense minuteque pilosula, aliter glabra, costa venisque prominentibus, venulis manifestis sed vix elevatis, subtus fere concolor, ad venas puberula, aliter glabra vel glabrata, costa gracili elevata, nervis lateralibus utroque latere c. 16 angulo semirecto abeuntibus, gracilibus, prominentibus, arcuatis, juxta marginem conjunctis, nervulis prominulis laxae reticulatis; inflorescentia terminalis cymoso-umbellata 2 cm. longe pedunculata, c. 1.5 cm. longa et 3.5 cm. lata, ramis primariis fastigiatis subpatentibus pallidis dense velutino-pilosulis, basi non bracteatis, bracteis supra basin rami insertis linearibus vel subulatis plerumque 3-6 mm. longis, cymis dense breviterque fastigiato-ramulosis fere capituliformibus numerosis dense multifloris, floribus sessilibus vel brevissime pedicellatis; hypanthium late turbinatum 0.5 mm. longum ut calyx dense pilosulum, calyce 0.5 mm. longo pallido acute dentato; corolla non visa.—Peru: In forest, La Victoria, on the Amazon River, Dept. Loreto, August 23, 1929, *Llewelyn Williams 2702* (Herb. Field Mus. No. 604,492, type).

Because of the absence of corollas, it is not certain that this plant is not a *Palicourea* rather than a *Psychotria*. I have not been able to associate it with any described species of either group.

***Psychotria stenostachya*, sp. nov.**—Frutex vel arbor 1-7.5 m. alta, ramulis crassiusculis subteretibus vel obtuse tetragonis, vetustioribus plerumque ochraceis sordidis, novellis interdum ferrugineis plus minusve dense adpresso-pilosulis, internodiis brevibus vel elongatis; stipulae persistentes erectae ferrugineo-tomentellae in vaginam truncatam 4-6 mm. longam incrassatam connatae, vagina in lacinias 4 remotas lineari-subulatas 5-9 mm. longas desinente; folia petiolata opposita, petiolo crassiusculo 1-2.5 cm. longo adpresso-pilosulo vel glabrato; lamina firme membranacea elliptica, oblonga-elliptica vel

obovato-elliptica, 14–26 cm. longa, 4.5–12 cm. lata, abrupte acuminata, acumine anguste triangulari attenuato, basi acuta vel abrupte acuminata, interdum basin versus cuneatim angustata, supra viridis, glabra, costa venisque non elevatis, subtus pallidior, saepe brunnes-cens, ad costam venasque minute ferrugineo-puberula vel minute adpresso-pilosula, aliter glabra vel glabrata, costa gracili elevata, nervis lateralibus utroque latere c. 13 angulo acuto abeuntibus, obliquis, gracillimis, prominentibus, arcuatis, juxta marginem conjunctis vel in marginem desinentibus, venulis transversis arcte subparallelis; inflorescentia terminalis 4–10.5 cm. longa, 0.8–1.5 cm. lata, spiciformis, 1–3 cm. longe pedunculata, e cymulis numerosis sessilibus vel usque ad 5 mm. longe pedunculatis compositis, cymulis dense pauci- vel multifloris, rhachi dense ferrugineo-tomentosa, bracteis inferioribus triangularibus vel lanceolatis plerumque 3–6 mm. longis acutis vel acuminatis subrigidis, floribus arcte sessilibus; hypanthium 0.5 mm. longum tomentellum vel glabratum, calyce 0.5 mm. longo tomentello vel glabrato late campanulato truncato vel inaequaliter denticulato; corolla viridi-alba extus ferrugineo-tomentella vel interdum glabrata in alabastro apice tuberculis 5 angustis elongatis onusta, tubo crassiusculo c. 5 mm. longo superne non vel vix dilatato in fauce non barbato, lobis 5 ovato-oblongis adscendentibus 2 mm. longis obtusis; antherae subexsertae lineares recurvae fere 2 mm. longae; fructus aurantiacus subglobosus 6 mm. longus glabratus basi et apice rotundatus, pyrenis 5 dorso obtuse costatis facie interiore angustis et anguste leviterque sulcatis.—Peru: In dense forest, San Antonio, on Río Itaya, Dept. Loreto, alt. 110 m., September 18, 1929, *E. P. Killip and A. C. Smith 29294* (Herb. Field Mus. No. 607,496, type), *29419, 29413, 29346*. Pebas, on the Amazon River, Dept. Loreto, July 23, 1929, *Williams 1606*; growing in forest. In mountains along the Río Mayo near Tarapoto, in 1856, *Spruce 4383*. In forest at foot of Mount Campana, December, 1855, *Spruce 4383*. Soledad, on Río Itaya, Dept. Loreto, in dense forest, *Killip & Smith 29574, 29767*. Pichis Trail, near Puerto Jessup, 400 m., *Killip & Smith 26220*. Between Yurimaguas and Balsapuerto, lower Río Huallaga Basin, Dept. Loreto, 135–150 m., in dense forest, *Killip & Smith 28160*. Puerto Arturo, below Yurimaguas, 135 m., in dense forest, *Killip & Smith 27925* (U. S. Nat. Herb.). Balsapuerto, in dense forest, 150–350 m., *Killip & Smith 28639* (U. S. Nat. Herb.).

Psychotria ilheosana, nom. nov. *Mapouria crassa* Muell. Arg. in Mart. Fl. Bras. 6^a: 389. 1881, non *P. crassa* Benth. 1841.

Psychotria aemulans (Muell. Arg.), comb. nov. *Mapouria aemulans* Muell. Arg. in Mart. Fl. Bras. 6^a: 417. 1881.

Psychotria umbelluligera (Muell. Arg.), comb. nov. *Mapouria umbelluligera* Muell. Arg. Flora 59: 496, 497. 1876.

Psychotria tristicula, nom. nov. *Mapouria tristis* Muell. Arg. Flora 59: 458, 465. 1876, non *P. tristis* Winkl. 1909.

This Brazilian species belongs to a group in which Mueller seems to have given names to too large a number of forms of doubtful specific value. *P. tristicula* is a close relative of *P. alba* R. & P.

Psychotria proxima, nom. nov. *Mapouria Martiana* Muell. Arg. Flora 59: 458, 464. 1876, non *P. Martiana* Muell. Arg. 1881.

Psychotria puberulina (Muell. Arg.), comb. nov. *Mapouria puberulina* Muell. Arg. Flora 59: 459, 465. 1876.

Psychotria Glaziovii Muell. Arg. in Mart. Fl. Bras. 6^a: 267. 1881.

The species was based upon three Brazilian collections, *Glaziou 3037* and *Riedel 118* and *643*. Mueller states that he had not seen the fruit, but a specimen from the Berlin herbarium ("Ex herb. Eichler") collected by Glaziou, without number, date, or definite locality, bears mature fruit. This is globose or ellipsoid, 7 mm. long, glabrous, rounded at base and apex, nearly smooth, and crowned by the large persistent calyx. The two pyrenes are broadly rounded on the back, and plane on the inner surface but very shallowly and narrowly sulcate longitudinally.

Psychotria nuda (C. & S.) Wawra, Itin. Princ. Coburg. 1: 128. 1883. *Cephaelis nuda* C. & S. Linnaea 4: 135. 1829. *Suteria nuda* Mart. Flora 24: Beibl. 71. 1841. *Suteria Hookeriana* Gardn. in Hook. Lond. Journ. Bot. 4: 109. 1845, non *P. Hookeriana* Steud. *P. Gardneriana* Muell. Arg. in Mart. Fl. Bras. 6^a: 379. 1881, non *P. Gardneriana* Muell. Arg. op. cit. 235.

The genus *Psychotria* is so large that there is some excuse for overlooking earlier published specific names, but it is rather curious that Mueller in the *Flora Brasiliensis* should have proposed the name *Psychotria Gardneriana* for two distinct species (the other is a *Paliourea*). He rejected the earlier name *nuda* for this species because he considered it inappropriate.

Psychotria cupularis (Muell. Arg.), comb. nov. *Mapouria cupularis* Muell. Arg. Flora 59: 459, 465. 1876.

Psychotria brachyanthema, sp. nov.—Dense ramosa, ramulis gracillimis teretibus laevibus olivaceis, internodiis abbreviatis glabris; stipulae minutae erectae persistentes viridescentes in vaginam c. 0.7 mm. longam truncatam connatae, vagina laciniis 4 remotis subulatis 0.5 mm. longis instructa; folia breviter petiolata opposita, petiolo gracili glabro 2–5 mm. longo; lamina crasse membranacea anguste lanceolato-oblonga 2.5–5 cm. longa, 0.7–1.5 cm. lata, longe et subabrupte acuminata, acumine angusto attenuato apice obtusiusculo, basin versus sensim angustata, glabra, supra in sicco viridis, lucidula, costa elevata, venis prominulis, subtus paullo pallidior, anguste marginata, costa gracili elevata utrinque anguste marginata, nervis lateralibus utroque latere 6–7 obliquis, angulo acuto adscendentibus, vix prominulis, gracilibus, marginem fere attingentibus, nervulis obsoletis; inflorescentia terminalis graciliter 1–1.5 cm. longe pedunculata parva, dense c. 9-flora, c. 1 cm. longa et lata, basi trichotoma, e cymulis plerumque 3 densifloris composita, ramis suberectis ut pedunculus gracilibus sparse minuteque puberulis, basi bracteatis, bracteis subulatis puberulis 1–2 mm. longis, floribus minute bracteolatis 1–2 mm. longe pedicellatis, pedicellis apice articulatis; hypanthium late obovoideum 0.7 mm. longum minutissime puberulum, calyce fere aequilongo 5-lobato, lobis ovatis acutis extus minute puberulis; corolla in alabastro oblonga 3.5 mm. longa apice rotundata extus minute griseo-pulverulacea.—Brazil: Without definite locality, 1893–94, A. Glaziov 20361 (Herb. Berol., type).

Apparently a member of the subgenus *Eupsychotria*, section *Brachythysae*, group *Nitidulae*, and related to *P. nitidula* C. & S. In that species, however, the corolla is glabrous.

Psychotria Robertii, sp. nov.—Omnino glabra, ramulis gracillimis teretibus viridibus, vetustioribus ochraceis, internodiis plerumque 1–2 cm. longis; stipulae minutae persistentes in vaginam truncatam vix 1 mm. longam induratum connatae, vagina dentibus 4 minutis subulatis instructa; folia petiolata opposita, petiolo gracillimo 6–10 mm. longo; lamina membranacea anguste lanceolato-oblonga 5–9.5 cm. longa, 1–2 cm. lata, versus apicem longe sensimque attenuata, apice ipso anguste obtuso, versus basin brevius angustata, supra in sicco laete viridis, vix lucidula, costa venisque vix prominulis, subtus paullo pallidior, lucidula, costa gracillimo elevata, nervis lateralibus utroque latere c. 11 tenerrimis angulo fere recto abeuntibus, prominulis, fere rectis, prope marginem conjunctis, nervulis obscuris laxè reticulatis; inflorescentia terminalis gracillime 2–2.5 cm. longe pedunculata, interdum basi folio reducto fulcrata, cymosopaniculata, laxissime multiflora, 2–4 cm. longa, 4–7 cm. lata, basi trichotoma, superne oppositiramosa vel dichotoma, ramis gracillimis adscendentibus vel patentibus basi bracteatis, bracteis minutis triangularibus acutis, floribus omnibus pedicellatis in cymulas vel

umbellulas c. trifloras dispositis, pedicellis gracilibus rectis viridibus plerumque 3-4 mm. longis; hypanthium obovoideum c. 0.6 mm. longum basi acutum, calyce persistente hypanthio paullo brevior remote et obsolete 5-denticulato; cetera ignota.—Brazil: Engenheiro Reeve, State of Espirito Santo, January 18, 1903, A. Robert (Percy Sladen Expedition; Herb. Berol., type).

This species is a relative of *P. jasminoides* Standl., of the same region, but the latter has a decidedly different aspect because of its broader and obtuse leaves.

***Psychotria jasminoides*, sp. nov.**—Omnino glabra, ramulis gracillimis subteretibus viridibus, internodiis elongatis; stipulae erectae virides persistentes parvae in vaginam vix 1 mm. longam truncatam connatae, vagina in lacinias minutas lineari-subulatas vix 1 mm. longas remotas desinente; folia breviter petiolata opposita, petiolo gracili 5-10 mm. longo; lamina crasse membranacea oblonga vel oblanceolato-oblonga 4.5-10 cm. longa, 1.5-4 cm. lata, apice obtusa vel acutiuscula, basin versus sensim longoque vel brevius angustata, supra in sicco laete viridis, vix sublucida, costa venisque prominulis, subtus multo pallidior, angustissime et inconspicue marginata, costa gracili elevata, nervis lateralibus utroque latere c. 10 angulo fere recto abeuntibus, gracillimis, prominulis, fere rectis, prope marginem conjunctis, venis interpositis obscuris vel nullis, venulis obscuris vel obsolete; inflorescentia terminalis 2-3 cm. longe pedunculata cymosocorymboso-paniculata, laxissime multiflora, 2.5-4.5 cm. longa et 3.5-8 cm. lata, basi trichotoma, supra oppositiramosa, ramis gracillimis angulo lato adscendentibus viridibus angulatis, basi bracteatis, bracteis lanceolato-subulatis 1 mm. longis vel brevioribus persistentibus, bracteolis hypanthio vulgo paullo brevioribus, floribus in cymulas laxae trifloras dispositis, pedicellis rectis viridibus 2-5 mm. longis, flore centrali sessili; hypanthium viride turbinato-cylindraceum 1 mm. longum, calyce late companulato hypanthio paullo brevior et latiore remote breviterque denticulato; corolla extus glabra pallida in alabastro clavata et apice depressa late 4-tuberculata, tubo in anthesi gracili 6 mm. longo superne paullo dilatato recto, lobis 4 patentibus ovato-ovalibus apiculato-acutis intus glabris; antherae breviter exsertae lineari-oblongae 1.5 mm. longae.—Brazil: Engenheiro Reeve, State of Espirito Santo, A. Robert (Percy Sladen Expedition; Herb. Berol., type).

A member of the group *Pedicellatae* of Mueller's subgenus *Eupsychotria*, section *Brachythyrsae*, and related to *P. nemorosa* Gardn. and *P. leiocarpa* C. & S. From both those species the present plant differs in its obtuse, oblanceolate-oblong leaves, which retain their bright green color when dried.

***Psychotria rauwolfioides*, sp. nov.**—Frutex omnino glaber, ramulis teretibus pallide viridibus gracilibus, internodiis valde elongatis saepe folia fere aequantibus; stipulae erectae persistentes in

vaginam incrassatam truncatam annuliformem 1 mm. longam connatae, margine vaginae laciniis 4 dentiformibus 1 mm. longis remotis instructo; folia breviter petiolata opposita, petiolo supra leviter sulcato gracili 7–10 mm. longo; lamina crasse membranacea elliptico-oblonga vel anguste elliptico-oblonga 8–14 cm. longa, 3–4.5 cm. lata, subabrupte acuminata, acumine anguste triangulari attenuato obtuso, basi acuta, supra viridescens, lucida, costa non elevata, venis prominulis, subtus multo pallidior, costa gracili elevata, nervis lateralibus utroque latere c. 13 angulo fere recto abeuntibus, gracilimis, prominulis, subcurvis, prope marginem conjunctis, aliis plerumque 2 tenuioribus et brevioribus parallelis interjectis, nervulis prominulis arcte reticulatis; inflorescentia terminalis sessilis cymosopaniculata 4.5 cm. longa et aequilata basi trichotoma, ramis 3 primariis nudis fere 3 cm. longis olivaceis subcompressis, cymis c. 1.5 cm. longis et latis dense multifloris, bracteis ad basin ramorum viridescens triangularibus acuminatis, floribus dense congestis sessilibus; hypanthium late turbinatum 1 mm. longum, calyce fere aequilongo late campanulato hypanthio latiore remote 5-dentato, dentibus anguste triangularibus acutis; corolla in alabastro fere columnaris 2–2.5 mm. longa extus glabra fauce dense flavo-barbata, in tota longitudine crasse 5-costata, apice subtruncata et brevissime obtuseque 5-tuberculata, lobis ovalibus patentibus apice subcucullatis et obtusis tubum aequantibus vel subaequantibus; antherae subexsertae oblongae; stylus crassiusculus corollae subaequalis, ramis brevibus incrassatis.—Brazil: Without definite locality, 1890–91, A. Glaziov 18302 (Herb. Berol., type).

Referable to the group *Nitidulae* of Mueller's subgenus *Eupsychotria*, section *Brachythyrseae*, and apparently a close relative of *P. pentaphthosa* Muell. Arg. That species has a corolla twice as large as in *P. rauwolfioides*.

***Psychotria Krauseana*, nom. nov.** *P. inundata* Krause, Verh. Bot. Ver. Brandenb. 50: 108. 1908, non *P. inundata* Benth. 1841.

***Psychotria ibitipocae*, sp. nov.**—Frutex, ramulis gracilibus teretibus ochraceis dense minuteque asperulo-puberulis, internodiis 3–3.5 cm. longis; stipulae suberectae persistentes extus puberulae et strigosae in vaginam 3 mm. longam connatae, vagina in lacinias 4 approximatas 4–5 mm. longas lanceolato-attenuatas intus glabras desinente; folia breviter petiolata opposita, petiolo subgracili 3–4 mm. longo scaberulo-puberulo; lamina firme membranacea lanceolata vel lanceolato-oblonga 4.5–7 cm. longa, 1.5–2 cm. lata, longe sensimque attenuato-acuminata, acumine angusto obtuso, basi obtusa vel acuta, supra in sicco fusca, minute denseque scaberulo-puberula, costa prominente, venis non elevatis, subtus pallidior, praesertim ad venas asperulo-puberula, costa gracili elevata, nervis lateralibus utroque latere c. 6 valde obliquis, angulo angusto adscendentibus, gracilibus, prominentibus, in marginem desinentibus, nervulis subimpressis arctissime reticulatis; inflorescentia terminalis sessilis capitiformis c.

2.5 cm. longa et aequilata, basi trichotoma, ramis primariis crassiusculis usque ad 11 mm. longis sparse puberulis vel glabratiss, bracteis exterioribus in sicco purpurascensibus late ovatis 8-9 mm. longis acutis vel breviter acuminatis utrinque scaberulo-puberulis ciliatis, bracteis interioribus paullo brevioribus sed flores fere aequantibus, floribus "caeruleis" sessilibus; hypanthium breve turbinatum, calyce c. 1 mm. longo glabrato 5-fido, laciniis triangularibus vel anguste triangularibus acutis; corolla extus glabra, tubo crasso 10 mm. longo superne sensim dilatato fauce 3 mm. lato, intus non barbato, lobis 5 patentibus oblongo-triangularibus acutiusculis 2 mm. longis; antherae subexsertae lineari-oblongae 2 mm. longae.—Brazil: Serra de Ibitipoca, June, 1896, *H. Magalhaes 1356* (Herb. Berol., type).

The plant belongs to Mueller's subgenus *Cephaelis*, group *Paniculastreae*, and is related to *P. purpurascens* Muell. Arg. and *P. mesotropa* Muell. Arg., both of which are Brazilian. *P. mesotropa* differs in having a corolla 5 mm. long whose lobes equal the tube; in *P. purpurascens* the corolla is villous-pubescent.

***Psychotria friburgensis*, sp. nov.**—Ramosa, ramulis crassiusculis teretibus in sicco fuscis glabris, internodiis mediocribus; stipulae glabrae subpersistentes in vaginam truncatam vix 1 mm. longam connatae, vagina laciniis 4 minutis dentiformibus 0.5 mm. longis instructa; folia petiolata opposita, petiolo gracili 9-14 mm. longo glabro; lamina papyracea obovato-elliptica 6-9.5 cm. longa, 2.5-5 cm. lata, abrupte acuta vel breviter acuminata, acumine triangulari obtusiusculo, basin versus plus minusve abrupte et longius vel breviter angustata, glabra, supra lucidula, in sicco fusca, costa venisque non elevatis, subtus multo pallidior, ubique dense minuteque pallidopuncticulata, costa gracili elevata, nervis lateralibus utroque latere c. 11 obscuris, non elevatis, angulo latiusculo adscendentibus, in marginem desinentibus, nervulis obsoletis; inflorescentia terminalis 5 mm. tantum longe pedunculata, late cymoso-paniculata, c. 5 cm. longa et 7 cm. lata, laxa multiflora, basi trichotoma, superne oppositoramosa vel dichotoma, ramis gracilibus angulatis minutissime puberulis vel fere glabris adscendentibus vel subpatentibus, basi bracteatis, bracteis infimis lineari-subulatis usque ad 4 mm. longis, superioribus brevioribus persistentibus lanceolatis vel triangularibus acutis, floribus bracteolatis in cymulas plerumque trifloras dispositis, flore centrali sessili, ceteris pedicellatis, pedicellis crassiusculis rectis plerumque 3-5 mm. longis minute puberulis vel glabratiss; hypanthium ut calyx minute pulverulaceum late obovoideum 0.6 mm. longum, calyce hypanthio multo latiore 0.5 mm. longo truncato vel remote et obsolete lobulato; corolla extus dense furfuraceo-tomentella in alabastro apice obtusa, tubo crassiusculo 6 mm. longo superne sensim dilatato, in fauce non barbato, lobis 5 triangulari-oblongis obtusis 2 mm. longis intus minute papillosis; antherae inclusae; stylus breviter exsertus.—Brazil: Friburgo, May, 1884, *Mendonça 1054* (Herb. Berol., type).

This plant bears some resemblance to *P. pallens* Gardn., although it is not by any means certain that that species is its nearest relative. *P. pallens* has longer and relatively narrower leaves with conspicuous veins.

Psychotria Loeffgrenii, sp. nov.—Omnino glabra, ramulis gracilibus teretibus laevibus in sicco olivaceo-brunnescentibus, internodiis valde elongatis; stipulae minutae persistentes erectae 1.5–2 mm. longae in vaginam brevissimam incrassatam connatae, vagina laciniis 4 subulatis rigidis onusta; folia sessilia crasse membranacea lanceolato-oblonga vel ovato-oblonga 11–15 cm. longa, 4–6.5 cm. lata, versus apicem acutum sensim angustata, basi anguste rotundata et emarginata, supra in sicco lutescens, lucidula, costa anguste sulcata, venis prominentibus, subtus concolor, costa gracili elevata, nervis lateralibus utroque latere c. 9 obliquis, angulo lato adscendentibus, gracilibus, prominentibus, remote a margine conjunctis, nervulis prominulis laxe reticulatis; inflorescentia terminalis 4 cm. longe pedunculata, late depresso-cymoso-paniculata, corymbiformis, c. 2.5 cm. longa et 4 cm. lata, laxa multiflora, ramis alternis late adscendentibus gracilibus angulatis basi bracteatis, bracteis lineari-subulatis 1–2 mm. longis persistentibus inconspicuis, floribus in cymulas irregulares laxas dispositis, pedicellis 1–3 mm. longis superne incrassatis apice articulatis; hypanthium 1 mm. longum campanulatum basi late rotundatum, calyce hypanthio duplo breviori subpatente truncato vel brevissime remoteque denticulato; corolla extus glabra in alabastro 3.5 mm. longa apice obtusa et obscure tuberculata, lobis latis obtusis tubo aequilongis vel paullo brevioribus.—Brazil: Ilha de San Sebastião, São Paulo, July 26, 1895, *Alb. Löfgren 11734* (Herb. Berol., type).

The plant seems to belong to Mueller's subgenus *Eupsychotria*, section *Brachythyrseae*. In that group it is noteworthy for its sessile leaves.

Psychotria Wilkesiana, sp. nov.—Ut videtur densiuscule ramosa, ramulis crassiusculis subteretibus, vetustioribus ochraceis glabris, novellis dense pilis patentibus hispidulis, internodiis brevibus vel plus minusve elongatis; stipulae persistentes suberectae hispidulae in vaginam truncatam incrassatam 2–2.5 mm. longam connatae, vagina in lacinias 4 erectas subulatas 1.5–2 mm. longas desinente; folia breviter petiolata opposita, petiolo gracili 3–5 mm. longo hispidulo; lamina crasse membranacea elliptica vel ovato-elliptica 4.5–7 cm. longa, 1.8–3 cm. lata, abrupte acuminata, acumine angusto attenuato, basi acuta vel breviter contracta, supra in sicco fusca, glabra, interdum sublucida, costa venisque subimpressis, subtus parum pallidior, saltem ad venas sordide puberula, costa gracillima elevata, nervis lateralibus utroque latere c. 9 obliquis, angulo lato adscendentibus, gracilibus, prominentibus, valde arcuatis, in marginem desinentibus, nervulis numerosissimis sed obscuris; inflorescentia terminalis 1–1.5 cm. longe pedunculata depresso-cymoso-paniculata, corymbiformis

vel subglobosa, 1.5–2 cm. longa, 1.5–2.5 cm. lata, dense multiflora, compacta, pedunculo dense hispidulo, ramis brevibus crassiusculis oppositis vel subfasciculatis dense sordido-puberulis basi bracteatis, bracteis lineari-subulatis plerumque 1–1.5 mm. longis, floribus in cymulas parvas densas dispositis plerumque breviter crasseque pedicellatis; hypanthium vix 1 mm. longum minutissime puberulum turbinatum, calyce subpatente c. 0.5 mm. longo truncato vel obscure remoteque lobulato; corolla extus dense pulverulacea 5 mm. longa, in alabastro apice depressa et grosse obtuseque 5-tuberculata, tubo crasso superne vix dilatato in fauce non barbato, lobis 5 late oblongis obtusis patentibus 1.5 mm. longis; antherae subexsertae lineares 1.7 mm. longae. — Brazil: Rio de Janeiro, *Sello* (Herb. Berol., type). Without definite locality, *Wilkes Exploring Expedition* (U. S. Nat. Herb.).

The species is a well-marked one because of its small leaves, characteristic pubescence, and distinctive corolla, but I have not been able to determine satisfactorily its relationship.

***Psychotria tapajozensis*, sp. nov.** — Frutex 1–2-metralis, ramulis crassis in sicco subcompressis et fuscis glabris, internodiis brevibus; stipulae in vaginam persistentem glabram truncatam 6 mm. longam erectam connatae; folia breviter petiolata opposita, petiolo crassiusculo 2–3 cm. longo; lamina in sicco crasse membranacea oblanceolato-oblonga 17–34 cm. longa et ultra, 4–8 cm. lata, abrupte breviterque acuminata, acumine triangulari acuto, basin versus longissime sensimque attenuata, glabra, minute albido-puncticulata, in sicco fusca, costa venisque supra non elevatis, costa crassiuscula subtus prominente, nervis lateralibus numerosis tenerrimis obscuris angulo acuto adscendentibus; inflorescentia terminalis cymoso-paniculata c. 4.5 cm. longa et aequilata, dense multiflora, late ovoidea, 10 cm. longe pedunculata, pedunculo crasso glabro, ramis crassis et plus minusve compressis basi saepe valde dilatatis et bracteatis, infimis verticillatis patentibus, superioribus divaricatis vel interdum subreflexis, bracteis persistentibus late ovato-triangularibus acutis vix 2 mm. longis, floribus in cymulas parvas dispositis, sessilibus vel crasse 1–2 mm. longe pedicellatis; hypanthium cylindraceum glabrum 0.8 mm. longum, calyce lato 0.5 mm. longo breviter 5-lobulato, lobis rotundatis vel obtusis; corolla vinacea extus glabra in alabastro anguste clavata 6 mm. longa apice obtusa vel rotundata, lobis tubo multo brevioribus. — Brazil: San Gabriel, Río Tapajoz, January, 1916, *Kuhlmann 1458* (Herb. Berol., type).

According to the collector, the rachis of the inflorescence is at first white, but after anthesis reddish-vinaceous, and the fruits (none are present on the specimen) also are reddish-vinaceous.

The gross characters of this plant are similar to those of the widely distributed *P. uliginosa* Sw., in which the inflorescence is axillary.

From the rather unsatisfactory specimen of *P. tapajozensis* available for study, the inflorescence appears to be definitely terminal, although this is not altogether certain.

***Psychotria lucidifolia*, sp. nov.**—Ramuli graciles teretes ferrugineo-fusci glabri; stipulae erectae persistentes minutae in vaginam vix 1 mm. longam truncatam connatae, vagina in lacinias 4 vix 1 mm. longas remotas anguste triangulares desinente; folia brevissime petiolata opposita, petiolo gracili 2-3 mm. tantum longo glabro; lamina membranacea elliptico-oblonga usque ad late elliptica 6-20 cm. longa, 2.5-8 cm. lata, abrupte acuta vel breviter acuminata, interdum subrotundata et apiculato-acuminata, acumine triangulari acuminato, basi acuta vel rare subobtusata, interdum basin versus sensim angustata, glabra, supra olivacea, lucida, costa venisque prominulis, venulis quoque prominulis et conspicuis, subtus opaca, costa gracili elevata, nervis lateralibus utroque latere c. 10 obliquis, angulo semirecto vel latiore abeuntibus, gracilibus, prominentibus, leviter arcuatis vel fere rectis, in marginem desinentibus, nervulis prominulis arcte reticulatis; inflorescentia terminalis 1-2.5 cm. longe pedunculata capituliformis 12-15 mm. longa et 2-3 cm. lata, dense multiflora, basi trichotoma et exinvolucrata, pedunculo ut rami sparse minuteque piloso, ramis primariis usque ad 4 mm. longis, floribus sessilibus dense congestis, bracteis exterioribus foliaceis ellipticis vel ovatis 8-12 mm. longis, c. 6 mm. latis, acutis, basi breviter angustatis, venosis, glabris, ciliatis, interioribus brevioribus et angustioribus; hypanthium ut calyx glabrum c. 0.7 mm. longum, calyce late campanulato aequilongo truncato et minute remoteque denticulato; corolla in alabastro apice sparse pilosula, aliter glabra, tubo 7 mm. longo infra gracillimo supra abrupte dilatato fauce non barbato, lobis 5 lanceolato-oblongis acutis fere 5 mm. longis intus glabris; antherae exsertae lineares subcurvae 2 mm. longae.—Brazil: Without locality data, *A. Glaziov* 13933 (Herb. Berol., type), 9891 (Herb. Berol.).

Referable to Mueller's subgenus *Eupsychotria*, section *Bracteosae*.

***Palicourea corymbifera* (Muell. Arg.), comb. nov.** *Psychotria corymbifera* Muell. Arg. in Mart. Fl. Bras. 6^o: 247. pl. 35. 1881.

The following recent collections of this species are in the herbarium of Field Museum: Brazil: Manaos, State of Amazonas, in sandy forest or dense woods, *Killip & Smith* 30141, 30104; a tree 4.5-7.5 m. high; branches of the inflorescence and the calyx yellow; corolla red.

***Palicourea obscurata* (Muell. Arg.), comb. nov.** *Psychotria obscurata* Muell. Arg. in Mart. Fl. Bras. 6^o: 253. 1881.

***Palicourea subspicata* Huber, Bol. Mus. Goeldi 4: 613. 1906.**

Of this curious and anomalous species the following specimens exist in the herbarium of Field Museum: Peru: Cerro de Cancha-

huaya, November 2, 1898, *Huber 1415* (photo. and fragment of type, from herb. Goeldi Mus.). Puerto Yessup, Dept. Junín, 400 m., in dense forest, July, 1929, *Killip & Smith 26259*; a slender shrub 1-1.5 m. high; branches of inflorescence and the flowers bright orange. —Brazil: Manaos, in sandy woods, October, 1929, *Killip & Smith 30097*; a tree of 6-7.5 m.; rachis of the inflorescence red; corolla tube deep pink, its lobes purple.

This is the only known species of *Palicourea* which has a simply racemose inflorescence.

***Palicourea Glaziovii*, sp. nov.**—Arbor 3-4-metralis ut videtur dense ramosa, ramulis crassis subteretibus fusco-ferrugineis glabris, internodiis saepe valde abbreviatis; stipulae persistentes erectae et vulgo adpressae 3-5 mm. longae vaginantes breviter bilobae glabrae incrassatae, lobis obtusis vel late rotundatis; folia petiolata opposita, petiolo crassiusculo glabro 1-1.5 cm. longo; lamina crasse coriacea glabra utrinque lucida oblonga vel elliptico-oblonga 6-11.5 cm. longa, 2-4 cm. lata, acuta vel breviter acuminata, apice obtuso, basi acuta vel basin versus breviter angustata, supra in sicco luteo-olivacea vel fusca, costa elevata, venis valde prominentibus, venulis prominulis, subtus fere concolor, costa crassiuscula valde elevata, nervis laterilibus utroque latere c. 12, aliis tenuioribus interpositis, elevatis, angulo fere recto abeuntibus, gracilibus, arcuatis, in marginem paullo incrassatum desinentibus, venulis prominentibus arcte reticulatis; inflorescentia terminalis 3-4 cm. longe pedunculata, depressopyramidali-paniculata vel corymbiformis, dense multiflora, 2-3.5 cm. longa et usque ad 4.5 cm. lata, basi trichotoma, ramis plerumque oppositis patentibus vel late adscendentibus minutissime puberulis vel fere glabris crassis angulatis basi bracteatis, bracteis subulatis persistentibus 2-4 mm. longis, floribus sessilibus vel brevissime pedicellatis in cymulas densas congestis, bracteolis linearibus obtusiusculis; hypanthium late turbinatum ut calyx minute puberulum fere 1 mm. longum, calyce aequilongo profunde 5-lobato, laciniis triangularibus acutis; corolla flava extus minutissime tomentella in alabastro 5 mm. longa apice rotundata, tubo crasso basi paullo ampliato; cetera ignota.—Brazil: Serra das Araras near Therezopolis, in 1888, *A. Glaziov 17033* (Herb. Berol., type). Therezopolis, Prov. Rio de Janeiro, sommet de la Serra das Araras, January, 1888, *J. T. de Moura 179* (Herb. Berol.). Serra das Araras, January, 1890, *de Moura* (Herb. Berol.).

This plant is represented by six full sheets of specimens in the Berlin herbarium, but none of them are in good flowering state. The species is a well-defined one by reason of its thick hard leaves which are very lustrous and have numerous veins. It seems to be altogether different from any of the species listed by Mueller from Brazil, and from those since described from the country.

Palicourea Gilgiana, sp. nov.—Frutex glaber, ramulis gracilibus teretibus laevibus in sicco fusco-olivaceis, internodiis plerumque elongatis; stipulae persistentes erectae in vaginam truncatam vel subtruncatam 1–3 mm. longam connatae; folia petiolata opposita, petiolo gracili 1–2.3 cm. longo; lamina membranacea elliptica, ovato-elliptica vel elliptico-oblonga, 6–14 cm. longa, 2.5–6 cm. lata, abrupte acuminata vel longiacuminata, acumine angusto attenuato apice anguste obtuso, basi acuta vel saepius abrupte contracta et breviter decurrens, supra in sicco luteo-viridis vel subfusca, costa venisque non elevatis, subtus fere concolor, costa gracili elevata, nervis lateralibus utroque latere c. 6 inaequalibus, angulo lato saepe fere recto abeuntibus, gracilibus, prominentibus, arcuatis, juxta marginem conjunctis, venulis prominulis laxo reticulatis; inflorescentia terminalis c. 1 cm. longe pedunculata densissime cymosa capituliformis 1–1.5 cm. longa et 1.5–2 cm. lata multiflora, cymulis brevissimis, bracteis ad basin cymae rotundato-ovatis et brevissimis, floribus sessilibus et congestis; hypanthium 0.8 mm. longum et aequilatum, calyce truncato vel brevissime lobato hypanthio aequilongo; corolla 7–9 mm. longa in alabastro apice depressa et minute 5-tuberculata, tubo gracili basi sigmoideo-curvo supra paulo dilatato, lobis triangularibus obtusis suberectis 1.5 mm. longis intus glabris; antherae subexsertae lineares 2–2.5 mm. longae.—Brazil: Strauch am Riberão fresco bei Blumenau, Prov. Santa Catharina, October, 1888, *E. Ule* 1040 (U. S. Nat. Herb., type). Itajahy, Prov. Santa Catharina, a shrub in forest, December, 1885, *Ule* 466 (Herb. Berol.). Hammonia, Santa Catharina, *Luederwaldt* 11643 (Herb. Berol.).

Referable to Mueller's subgenus *Psychotriopsis*, of which several Brazilian species are known. The present plant, however, seems amply distinct from any of those described by Mueller.

The species is named for Dr. L. Gilg, to whom the writer is deeply indebted for the loan of material of the South American Rubiaceae.

Palicourea Kuhlmannii, sp. nov.—Frutex 3-metralis, ramulis teretibus crassiusculis glabris, internodiis elongatis; stipulae erectae persistentes breviter connatae, lobis late semiovatis obtusissimis contiguus; folia breviter petiolata opposita, petiolo subtereti c. 12 mm. longo glabro crassiusculo; lamina crasse membranacea late lanceolato-oblonga, 19–25 cm. longa, 6.5–9 cm. lata, longe et angustissime acuminata, acumine fere lineari longe sensimque attenuato, basi acuta vel acutiuscula, utrinque glabra, fere concolor, in sicco flavido-viridis vel fusco-viridis, costa venisque supra prominentibus, costa subtus elevata gracili, nervis lateralibus utroque latere c. 15, remotis, gracilibus, angulo lato adscendentibus, arcuatis, prope marginem conjunctis, nervulis inconspicuis laxo reticulatis; inflorescentia terminalis 8 cm. longe pedunculata cymoso-paniculata subfastigiato-ramosa dense multiflora, 4 cm. longa et aequilata, ramis crassis suberectis minutissime puberulis, bracteis cito deciduis (non visis), pedicellis crassis plerumque 1–2 mm. longis minutissime puberulis;

hypanthium obovoideum 1.5 mm. longum minute puberulum, calyce c. 0.6 mm. longo truncato subpatente, integro vel minutissime denticulato; corolla viridi-flava extus minute pulverulacea tubulosa 15-16 mm. longa, tubo basi paullo dilatato, superne sensim dilatato, ore 4-4.5 mm. lato, lobis oblongo-ovatis erectis obtusis 3 mm. longis; stylus 2-3 mm. longe exsertus.—Brazil: Rio Sumidouro, affl. do Arinoia, December, 1914, *J. G. Kuhlmann* (*Comissão Rondon*) 1424 (Herb. Berol., type).

A relative of *P. iquitoensis* Krause, but in the latter the leaves are smaller and have fewer veins, and the corolla is shorter, with coarser pubescence.

Palicourea Gardneriana (Muell. Arg.), comb. nov. *Psychotria Gardneriana* Muell. Arg. in Mart. Fl. Bras. 6^o: 235. 1881.

Palicourea squarrosa (Muell. Arg.), comb. nov. *Psychotria squarrosa* Muell. Arg. in Mart. Fl. Bras. 6^o: 231. 1881.

Palicourea Weddelliana (Muell. Arg.), comb. nov. *Psychotria Weddelliana* Muell. Arg. in Mart. Fl. Bras. 6^o: 234. 1881.

Palicourea radians (Muell. Arg.), comb. nov. *Psychotria radians* Muell. Arg. in Mart. Fl. Bras. 6^o: 242. 1881.

Palicourea Urbaniana, sp. nov.—Frutex; ramuli vetustiores fusci teretes crassiusculi dense et minutissime puberuli, internodiis 1-5.5 cm. longis; stipulae persistentes basi incrassatae suberectae minute puberulae in vaginam 1 mm. longam truncatam connatae, vagina in lacinias 4 lineari-subulatas 1-1.8 mm. longas rigidas desinente; folia breviter petiolata opposita, petiolo minute puberulo crasso 2-4 mm. longo; lamina firme coriacea oblongo-ovata vel obovata, 3-6 cm. longa, 1.5-2.5 cm. lata, acuta vel breviter acuminata, acumine obtuso vel subacuto, basi acuta vel subobtusa, supra glabra, in sicco flavo-viridis, venis manifestis sed non elevatis, subtus praesertim ad venas minute puberula vel glabrata, costa crassiuscula elevata, nervis lateralibus utroque latere 5-9 angulo angusto adscendentibus, gracilibus, prominentibus, leviter arcuatis, prope marginem arcuato-conjunctis, nervulis prominentibus laxe reticulatis; inflorescentia terminalis 1-1.5 cm. longe pedunculata cymoso-paniculata, dense pauci- vel multiflora, c. 1.5 cm. longa et aequilata, ramis paucis suberectis subfasciculatis minute puberulis, bracteis paucis subulatis 1-2.5 mm. longis, floribus sessilibus vel pedicellis crassis 1-2 mm. longis minute puberulis stipatis; hypanthium late obovoideum 1.5 mm. longum minute puberulum, calyce fere 1 mm. longo subpatente minute multidenticulato; corolla lutea 1 cm. longa extus minute puberula, tubo angusto superne sensim dilatato ore 2.5-3 mm. lato, basi paullo incrassato, lobis 4 erectis late ovatis obtusis fere 2 mm. longis; fructus glabratus 5-6 mm. longus, pyrena abortu 1 dorso breviter obtuseque costata.—Brazil: State of Goyaz, 1894-95, A. Glaziou 21533 (Herb. Berol., type; "Herbarium Ign. Urban").

A species of Mueller's Section *Subcymosae*, noteworthy for its small leathery leaves and very small, much condensed inflorescences.

***Palicourea andaluciana*, sp. nov.**—Ramuli crassiusculi fusci subteretes glabri, internodiis elongatis; stipulae persistentes erectae vaginantes in vaginam 3–4 mm. longam glabram truncatam vel brevissime bilobam connatae; folia petiolata opposita, petiolo gracili 7–20 mm. longo glabro; lamina glabra subcoriacea oblanceolato-oblonga 6–13 cm. longa, 2–4 cm. lata, anguste marginata, abrupte acuminata, acumine angusto attenuato obtuso, basin versus longe sensimque attenuato-angustata, lucida, supra in sicco luteo-viridis vel fusca, costa venisque manifestis sed vix elevatis, subtus paullo pallidior, costa gracili elevata, nervis lateralibus utroque latere c. 11 angulo fere recto patentibus suboppositis, gracillimis, prominentibus, arcuatis, prope marginem conjunctis, venulis inconspicuis non elevatis arcte reticulatis; inflorescentia terminalis sessilis vel 3–4 cm. longe pedunculata late cymoso-paniculata, plus minusve corymbiformis, 6–11 cm. longa et aequilata vel latior, basi trichotoma, ramis gracilibus late adscendentibus vel suberectis basi bracteatis rectis sparse puberulis vel glabratis, bracteis inconspicuis subulatis plerumque 2–3 mm. longis, floribus in cymulas parvas densas dispositis sessilibus vel 1–3 mm. longe pedicellatis, pedicellis crassis; hypanthium glabrum turbinato-cylindraceum 0.8 mm. longum, calyce duplo brevior hypanthio latiore subpatente remote et inaequaliter acute dentato; corolla extus dense minuteque puberula in alabastro apice rotundata et nuda, 11–12 mm. longa, tubo crassiusculo basi valde ampliato subcurvo supra sensim dilatato fauce 3 mm. lato, lobis 5 late oblongis obtusis 2 mm. longis intus glabris; antherae breviter exsertae 2.5 mm. longae lineares post dehiscuntiam tortae; baccae ellipsoideae 5 mm. longae glabrae basi et apice rotundatae, pyrenis 2 dorso obtuse costatis facie interiore concavis et angustissime longitrorsum sulcatis.—Colombia: Between La Resina and Andalucía, Dept. Huila, August 22, 1926, S. Juzepczuk 6591 (Herb. Field Mus. No. 609,040, type; duplicates in Leningrad Herb.).

***Palicourea Raimondii*, sp. nov.**—Ramuli crassi subteretes ferruginei glabri, internodiis brevibus; stipulae persistentes erectae induratae glabrae fusco-ferrugineae in vaginam truncatam 4–5 mm. longam connatae, vagina in lacinias 4 remotas lineari-subulatas rigidas 1 cm. longas desinente; folia breviter petiolata opposita glabra, petiolo crasso 3–6 mm. tantum longo; lamina crasse coriacea elliptica vel elliptico-ovalis 8.5–14 cm. longa, 4–7 cm. lata, acuta vel abrupte breviterque acuminata, acumine triangulari obtusiusculo, basi obtusa vel rotundata, supra in sicco brunneo-fusca, lucida, costa venisque prominulis, subtus pallidior, brunnescens, costa gracili ut venae valde elevata, nervis lateralibus utroque latere c. 15 obliquis, gracilibus, angulo latiusculo adscendentibus, arcuatis, in marginem desinentibus, venulis prominentibus arcte reticulatis; inflorescentia terminalis 2 cm. longe pedunculata basi foliis 2 multo reductis fulcrata, cymoso-paniculata, pyramidalis, 8 cm. longa et 7 cm. lata,

basi trichotoma, ramis primariis longe nudis supra cymoso-paniculatis, ramulis basi bracteatis crassiusculis sparse ferrugineo-villosulis vel glabratiss, bracteis tenuibus lineari-subulatis inconspicuis 1-2 mm. longis saepe deciduis, floribus sessilibus vel brevissime pedicellatis in cymulas densas paucifloras dispositis; hypanthium glabratum late turbinatum 0.5 mm. longum, calyce hypanthio paullo latiore brevissimo remote obtuso-dentato; sparse villosulo vel glabrato; corolla lutea in alabastro 3.5-4 mm. longa extus sparse minuteque villosula vel puberula apice anguste rotundata, tubo crassiusculo basi paullo ampliatio; cetera ignota.—Peru: Dept. Puno, road from Sandia to Valle Grande between Entre Ramos and Yunca-Coya, in 1864, *A. Raimondi 11114* (Herb. Berol., type).

Like most of the numerous other Peruvian species of this genus, the present plant has no outstanding characters, but it is noteworthy for its rather large, very lustrous, thick, nearly sessile leaves with their numerous parallel, sharply elevated veins.

***Pallcourea Jelskii*, sp. nov.**—Arbor, ramulis crassiusculis minutissime puberulis subteretibus vel subcompressis ochraceis, internodiis 1.5-4 cm. longis; stipulae persistentes suberectae laxae vaginantes glabrae in sicco ferrugineo-fuscae alte connatae c. 1 cm. longae bifidae, laciniis late lanceolato-oblongis acutis; folia petiolata opposita, petiolo gracili 13-23 mm. longo glabra; lamina crasse chartacea anguste oblonga vel oblanceolato-oblonga 11-12 cm. longa, 3-4 cm. lata, abrupte acuta vel breviter et subabrupte acuminata, acumine triangulari obtusiusculo, basin versus longe sensimque angustata, glabra, anguste pallido-marginata, supra in sicco fusco-viridis, lucidula, costa venisque prominentibus, subtus vix pallidior, costa gracili elevata, nervis lateralibus utroque latere c. 15 obliquis, angulo semirecto adscendentibus, gracilibus, prominentibus, arcuatis, in marginem desinentibus, nervulis inconspicuis laxae reticulatis; inflorescentia terminalis sessilis vel 5 mm. longe tantum pedunculata, parva, densa, 2-2.5 cm. longa, e capitulis paucis dense multifloris racemose dispositis composita, ramis lateralibus usque add 7 mm. longis crassis glabris, capitulis c. 7 mm. diam., bracteis numerosis glabris c. 5 mm. longis late ovatis acutis vel obtusis arcte adpressis, interioribus paullo brevioribus et angustioribus, bracteis ad basin ramuli insertis late triangulari-ovatis c. 7 mm. longis, floribus arcte sessilibus; hypanthium turbinato-cylindraceum 0.8 mm. longum glabrum, calyce 1 mm. longo 5-partito, laciniis late ovatis vel subrotundatis apice obtusis vel rotundatis glabris; corolla in alabastro 3.5 mm. tantum longa extus glabra, apice obtusa et minute 5-tuberculata; cetera ignota.—Peru: Tambillo, August, 1878, *C. de Jelski 357* (Herb. Berol., type). Tambillo, Dept. Cajamarca, October 30, 1878, *A. Raimondi 4962* (Herb. Berol.).

Since both the specimens are in an immature flowering stage, and the character of the fully developed corolla therefore uncertain, there is some doubt regarding the proper generic position of this plant,

but its foliage and general aspect are those of *Palicourea* rather than *Psychotria*. In *Palicourea* the plant is unusual because of its greatly condensed inflorescence.

***Palicourea villosiflora*, sp. nov.**—Frutex 1.5–2.5 m. altus, ramulis gracilibus teretibus, vetustioribus fusco-ferrugineis, novellis fulvo-pilosis, internodiis 4–5 cm. longis; stipulae persistentes in vaginam truncatam 4 mm. longam sparse pilosam connatae, vagina in lacinias 4 remotas erectas 7–8 mm. longas lanceolato-lineares attenuatas rigidas sparse breviterque pilosas desinente; folia breviter petiolata opposita, petiolo 5–10 mm. longo dense fulvo-piloso; lamina rigide membranacea anguste lanceolato-oblonga 11–17 cm. longa, 3.5–5 cm. lata, longe sensimque acuminata, acumine angusto attenuato, basin versus breviter angustata, supra laete viridis, asperula, pilis brevibus lutescentibus subadpressis pilosula, costa venisque vix prominulis, subtus fere concolor, ubique breviter patenti-pilosa, costa gracili elevata, nervis lateralibus utroque latere c. 18 subobliquis, angulo lato adscendentibus, gracilibus, prominentibus, arcuatis, prope marginem conjunctis, venulis paucis prominulis laxe reticulatis; inflorescentia terminalis depresso-cymosa 3 cm. longe pedunculata, e cymis 3 capituliformibus dense multifloris composita, c. 5 cm. lata, basi foliis reductis fulcrata, ramis brevibus crassis dense villosopilosis, bracteis linearibus viridibus plerumque 4–6 mm. longis sparse pilosulis et ciliatis, floribus arcte sessilibus dense congestis; hypanthium subglobosum fere 2 mm. longum dense villosum, calyce roseo c. 1.5 mm. longo villosulo profunde 5-dentato, dentibus triangularibus erectis acutis; corolla purpureo-rosea extus dense villosa 10 cm. longa, tubo basi paullo incrassato superne dilatato fauce 3.5 mm. lato, lobis 5 vix 2 mm. longis erectis ovatis obtusis.—Peru: In dense forest, Schunke Hacienda above San Ramón, Dept. Junín, alt. 1,400–1,700 m., June 8–12, 1929, *E. P. Killip and A. C. Smith 24568* (Herb. Field Mus. No. 607,813, type).

An isolated species, not closely related to any other known from Peru.

***Palicourea bracteosa*, sp. nov.**—Frutex vel arbor parva 3.5–5.5 m. alta, ramulis crassiusculis teretibus vel obtuse tetragonis fuscis vel olivaceis glabris, internodiis elongatis; stipulae erectae persistentes glabrae in vaginam adpressam 3–4 mm. longam truncatam connatae, vagina in lacinias 4 remotas lineari-subulatas 4–5 mm. longas desinente; folia breviter petiolata opposita, petiolo gracili glabro 6–12 mm. longo; lamina crasse membranacea rigidiuscula oblanceolato-oblonga 12–21 cm. longa, 3.5–7.5 cm. lata, abrupte acuminata, acumine anguste triangulari attenuato acuminato, basin versus sensim angustata, supra flavo-viridis, lucida, glabra, costa venisque prominulis, subtus vix pallidior, ad venas costamque minute sparseque pilosula vel fere omnino glabra, costa gracili elevata, nervis lateralibus utroque latere c. 20 angulo fere recto abeuntibus, gracilibus, prominentibus, subcurvis, juxta marginem conjunctis, venulis prominentibus arcte reticulatis; inflorescentia terminalis sessilis vel 3 cm.

longe pedunculata depresso-cymoso-paniculata dense multiflora, 4–11 cm. lata, cymis primo densissimis et fere capituliformibus, pedunculo ut rami dense patenti-pilosulo, ramis plus minusve compressis crassis adscendentibus, bracteis purpureis oblongis vel obovatis foliaceis plerumque 5–10 mm. longis acutis vel obtusiusculis breviter pilosulis et ciliatis persistentibus, floribus sessilibus secus ramos inflorescentiae post anthesin elongatos secundis bracteolis magnis sed bracteis brevioribus persistentibus et drupis longioribus; hypanthium dense pilosulum, calyce pilosulo vix 1 mm. longo 5-dentato, dentibus late triangularibus acutiusculis; corolla alba extus dense pilosula 9 mm. longa, tubo superne sensim dilatato, lobis suberectis triangulari-oblongis c. 2 mm. longis; stylus furfuraceo-puberulus; fructus didymoglobosus c. 4 mm. longus et 4–5 mm. latus, basi et apice rotundatus, dense minuteque patenti-pilosus, pyrenis 2 dorso late rotundatis obscure costulatis.—Peru: In dense forest, Puerto Bermúdez, Dept. Junín, alt. 375 m., July 14–17, 1929, *E. P. Killip and A. C. Smith 26419* (Herb. Field Mus. No. 607,558, type).

In many respects this plant is similar to *P. villosiflora* Standl., the latter differing conspicuously, however, in its densely pilosulous leaves with oblique costae, and in the much narrower bracts of the inflorescence.

***Palicourea lucentifolia*, sp. nov.**—Frutex praeter inflorescentiam glabra, ramulis crassiusculis obtuse angulatis, internodiis elongatis; stipulae persistentes erectae virides in vaginam 2 mm. longam truncatam connatae, vagina in lacinias 4 lineari-attenuatas rigidas 4–5 mm. longas desinente; folia brevissime petiolata opposita, petiolo crasso 5–7 mm. longo; lamina rigide herbacea lucida, lanceolato-oblonga vel anguste oblongo-lanceolata, 10–18 cm. longa, 3.5–5.5 cm. lata, longissime et angustissime attenuata, acumine fere lineari, basin versus longe attenuata, basi ipsa acuta vel acuminata, costa venisque supra prominentibus, costa subtus elevata gracili, nervis lateralibus utroque latere c. 18 prominentibus, angulo angusto vel lato adscendentibus, leviter arcuatis, gracilibus, marginem attingentibus, nervulis prominentibus; inflorescentia terminalis erecta graciliter 11 cm. longe pedunculata corymbiformis, c. 10 cm. longa et aequilata, fastigiato-ramosa, dense multiflora, ramis gracilibus suberectis sparse et minutissime puberulis compressis vel subangulatis, bracteis linearibus vel subulatis saepe infra axillas insertis 4–10 mm. longis, bracteolis conspicuis linearibus vel lineari-oblongeolatis acutis erectis 3–4 mm. longis, ramulis interdum dichotomis, floribus plus minusve secundis sessilibus vel crassiuscule pedicellatis; hypanthium glabrum latissime obovoideum c. 0.7 mm. longum, calyce minuto obsolete denticulato; cetera ignota.—Peru: Edge of forest, La Victoria on the Amazon River, August 29, 1929, *Llewelyn Williams 2906* (Herb. Field Mus. No. 604,457, type).

In the form of the inflorescence this plant resembles closely the Brazilian *P. corymbifera* (Muell. Arg.) Standl., a species with quaternate leaves.

***Palicourea pachycalyx*, sp. nov.**—Arbuscula, ramulis crassiusculis c. 4 mm. crassis subteretibus glabris, internodiis elongatis; stipulae persistentes glabrae in vaginam truncatam 1.5–2 mm. longam connatae, lobis oblongis 6–10 mm. longis obtusis approximatis subadpressis; folia petiolata opposita, petiolo 1.5–3 cm. longo gracili glabro; lamina firme membranacea elliptica vel oblongo-elliptica, 21–33 cm. longa, 8.5–19 cm. lata, breviter acuminata, basi acuta, interdum abrupte contracta et breviter decurrens, utrinque minutissime papillosa, supra laete viridis, glabra, costa venisque prominentibus, subtus vix pallidior, glabra vel ad costam minutissime sparseque puberula, costa gracili elevata, nervis lateralibus utroque latere c. 13 distantibus gracillimis prominentibus, angulo lato adscendentibus, marginem attingentibus, nervulis tenerrimis inconspicuis; inflorescentia terminalis ovoideo-paniculata subdense multiflora 3.5–5.5 cm. longe pedunculata, panicula 4.5–8 cm. longa et aequilata apice anguste rotundata, ramis crassis angulatis puberulis, inferioribus oppositis vel ternatis divaricatis, superioribus adscendentibus, bracteis linearibus vel oblongis plerumque 3–5 mm. longis minute puberulis vel glabratibus acutis vel obtusiusculis, paucis, ex axillis remotis, pedicellis crassis 1–3 mm. longis puberulis; hypanthium globosum 3–4 mm. longum et 4–5 mm. latum glabrum basi rotundatum; calyx hypanthio paulo brevior 5-lobatus, lobis late triangularibus obtusissimis erectis; corolla in alabastro subglobosa densissime tomentosa; fructus ovalis c. 9 mm. longus et 7 mm. latus, pyrenis 2 dorso acute grosseque 5-costatis.—Peru: In forest, Caballo Cocha, on the Amazon River, August 5, 1929, *Llewelyn Williams 2078* (Herb. Field Mus. No. 604,529, type).

The type material consists of two sheets of specimens, one of which bears mature fruits and the other immature buds. The species does not resemble closely any other known from this region, but may be recognized by the very large and broad calyx and unusually large fruits.

***Palicourea condensata*, sp. nov.**—Arbor 4.5–6-metralis, ramulis validis 6 mm. crassis compressis glabris; stipulae glabrae erectae in vaginam truncatam 2 mm. longam connatae, lobis oblongis obtusis subadpressis 8 mm. longis; folia breviter petiolata opposita, petiolo crassiusculo 2–3 cm. longo glabro; lamina membranacea oblongo-elliptica 29–34 cm. longa, 14–15 cm. lata, brevissime acuminata, basi acuta vel abrupte contracta et late decurrens, utrinque glabra, supra laete viridis, sublucida, costa venisque prominentibus, subtus paulo pallidior, costa gracili elevata, nervis lateralibus utroque latere c. 17 prominentibus distantibus gracillimis, angulo fere recto abeuntibus, prope marginem conjunctis, nervulis tenerrimis inconspicuis; inflorescentia terminalis 8.5 cm. longe pedunculata breviter cymoso-paniculata fastigiato-ramosa densissime multiflora, c. 4.5 cm. longa et 5.5 cm. lata, ramis crassis suberectis dense puberulis, bracteis lanceolatis plerumque 3–5 mm. longis acutis puberulis, pedicellis crassis plerumque 1–2 mm. longis dense puberulis; hypanthium subglobosum

2 mm. longum dense et minutissime puberulum; calyx c. 1.5 mm. longus subpatens brevissime lateque lobatus; corolla intense rosea extus densissime furfuraceo-tomentosa 16 mm. longa, tubo crasso basi paullo incrassato superne sensim dilatato et 4–5 mm. lato, lobis late oblongo-ovatis obtusis suberectis vix 2 mm. longis; fructus globoso-ovalis minutissime puberulus 6–7 mm. longus, pyrenis 2 dorso obtuse 5-costatis.—Peru: In woods, Yurimaguas, lower Río Huallaga, alt. 135 m., August 22–September 9, 1929, *E. P. Killip and A. C. Smith 28048* (Herb. Field Mus. No. 607,677, type). Apparently conspecific is the following collection: Brazil: Manaus, in dense forest, October 17, 1929, *Killip & Smith 30138*; a tree of 4.5–6 m.; pedicels purplish, the branches of the inflorescence bright red; corolla purplish red.

A relative of *P. iquitoensis* Krause, but in that the leaves are smaller and proportionately narrower, the stipules are much longer, and the smaller corolla is merely minutely puberulent or nearly or quite glabrous.

Palicourea iquitoensis Krause, Bot. Jahrb. Engler 40: 401. 1908, nomen; Verh. Bot. Ver. Brandenb. 50: 114. 1908.

The following specimens of this species are in the herbarium of Field Museum: Peru: Iquitos, July, 1902, *Ule 6237* (photo. and fragment of the type, from Herb. Berol.). Near Iquitos, July, 1929, *Williams 1384, 1451, 1515*. Mishuyacu, near Iquitos, in dense forest, *Killip & Smith 29865*; a tree of 3.5–4.5 m.; branches of the inflorescence orange; corolla yellow, the lobes margined with purple. Iquitos, in woods, *Killip & Smith 26932*; a shrub or slender tree 3–6 m. high; branches of the inflorescence bright orange; corolla yellow, the lobes bordered with purple.

Palicourea lucidula, sp. nov.—Frutex, ramulis crassiusculis subteretibus vel subcompressis glabris, internodiis 3.5–8 cm. longis; stipulae glabrae erectae virides in vaginam truncatam 1.5–2.5 mm. longam connatae, laciniis remotis lineari-subulatis 4–5 mm. longis attenuatis; folia brevissime petiolata opposita, petiolo crasso 8–15 mm. longo glabro; lamina membranacea elliptico-oblonga 29–32 cm. longa, c. 11 cm. lata, acuminata, basi acuta, utrinque glabra, supra laete viridis, lucida, costa venisque prominulis, subtus opaca, vix pallidior, costa gracili elevata, nervis lateralibus utroque latere c. 20 gracilibus prominentibus, angulo lato adscendentibus, arcuatis, marginem attingentibus, nervulis prominentibus laxè reticulatis; inflorescentia terminalis cymoso-paniculata fastigiato-ramosa densissime multiflora, 8–11 cm. longe pedunculata, basi trichotoma, c. 6 cm. longa et 5 cm. lata, ramis erectis acute angulatis crassis sparse minuteque puberulis vel fere glabris, bracteis bracteolisque foliaceis conspicuis lanceolatis vel anguste spathulatis plerumque 5–10 mm. longis acuminatis persistentibus fructu multo longioribus, minute ciliolatis,

floribus plus minusve secundis sessilibus vel 1–2 mm. longe pedicellatis; fructus globosus vel didymo-globosus 4 mm. longus et 4–5.5 mm. latus glaber, carpellis 2 dorso fere laevibus.—Peru: In dense forest, Santa Rosa, lower Río Huallaga below Yurimaguas, Dept. Loreto, alt. 135 m., September 1–5, 1929, *E. P. Killip and A. C. Smith 28816* (Herb. Field Mus. No. 607,736, type). In dense forest between Yurimaguas and Balsapuerto, 135–150 m., August 26–31, 1929, *Killip & Smith 28089*; branches, bracts, and inflorescence reddish brown to purple.

The plant is noteworthy for its large, lustrous, thin leaves and for the numerous large, narrow bracts of the inflorescence.

Palicourea charianthema, sp. nov.—Frutex 2–3.5 m. altus, ramulis gracillimis teretibus viridibus minutissime sparseque puberulis, internodiis valde elongatis; stipulae persistentes virides erectae in vaginam truncatam vix 1 mm. longam connatae, vagina in lacinias 4 lineares rigidas 1–1.5 mm. longas acutiusculas desinente; folia breviter petiolata opposita, petiolo gracili 4–8 mm. longo glabro; lamina membranacea in sicco laete viridis vel olivacea oblongo-lanceolata, 8–15 cm. longa, 3–5 cm. lata, longissime angustaeque acuminata, basi acuta vel abrupte acuta, supra glabra, costa venisque vix prominulis, subtus concolor, ad costam sparse minuteque pilosula vel glabra, costa gracili elevata, nervis lateralibus utroque latere c. 12 gracillimis, angulo lato adscendentibus, remotis, prominentibus, subarcuatis, prope marginem arcuato-conjunctis; inflorescentia terminalis c. 8 cm. longe pedunculata ut videtur recurva et pendula, angustissime et longissime thyrsoido-paniculata, racemiformis, laxe remoteque pauciflora, 10–22 cm. longa et vix 2 cm. lata, floribus in cymis 1–4-floras dispositis, cymis simpliciter racemosis distantibus, rhachi gracillima puberula, bracteis inconspicuis filiformi-subulatis vel filiformi-lanceolatis plerumque 1–2 mm. longis, pedicellis gracilibus 2–3 mm. longis pilosulis; hypanthium oblongo-clavatum 2–2.5 mm. longum minute pilosulum; calyx 4-lobus, laciniis 0.5–1 mm. longis triangularibus vel lanceolatis suberectis acutis vel acuminatis; corolla tubulosa 15 mm. longa sparse breviterque pilosula, tubo crassiusculo basi paullo incrassato interdum leviter curvo ore 3.5 mm. lato, lobis triangularibus suberectis 1.8 mm. longis acutis.—Peru: Wooded banks of the Río Itaya above Iquitos, Dept. Loreto, alt. 110 m., September 17–22, 1929, *E. P. Killip and A. C. Smith 29395* (Herb. Field Mus. No. 607,580, type); corolla and branches of the inflorescence light red. Peña Blanca, on Río Itaya, Dept. Loreto, in dense forest, 110 m., September 19, 1929, *Killip & Smith 29658*; branches of inflorescence, calyx, and corolla bright orange-red.

Evidently a relative of the Brazilian *P. tabacifolia* C. & S. The Peruvian plant, however, is distinguished by its long and extremely narrow, raceme-like inflorescence.

Rudgea hispidula, sp. nov.—Frutex metralis ut videtur dense ramosus, ramulis gracilibus teretibus olivaceis, novellis dense hispi-

dulis, internodiis plerumque elongatis; stipulae 1.5–4 mm. longae persistentes dense hispidulae alte connatae rotundatae mucronatae, dorso primo aculeolis paucis brevibus incrassatis pallidis auctae, aculeolis mox deciduis; folia brevissime petiolata interdum subsessilia opposita, petiolo usque ad 5 mm. longo hispidulo; lamina firme membranacea oblongo-elliptica usque ad late elliptica 6–10.5 cm. longa, 2–5.5 cm. lata, acuminata, acumine subobtusum, basin versus brevissime angustata et saepe anguste subcordata vel emarginata, supra viridis, glabra, costa venisque non elevatis, subtus paullo pallidior, praesertim ad venas minute puberula, costa gracili elevata, nervis lateralibus utroque latere c. 6 angulo semirecto abeuntibus, inaequalibus, gracilibus, prominentibus, fere rectis et versus marginem abrupte arcuatis, prope marginem conjunctis, nervulis vix prominulis laxe reticulatis; inflorescentia parva terminalis 6 mm. longe pedunculata, e cymulis 3 pedunculatis radiatim dispositis composita, pedunculo recto villosopiloso, ramis 3–4 mm. longis basi breviter bracteatis sparse pilosis, cymulis paucifloris congestis c. 5 mm. latis, floribus arcte sessilibus; hypanthium late turbinatum 0.7 mm. longum glabrum, calyce vix 0.5 mm. longo subtruncato; corolla alba in alabastro 2 mm. tantum longa sparse puberula apice rotundata nuda; cetera ignota.—Peru: In dense forest, Santa Rosa, lower Río Huallaga below Yurimaguas, Dept. Loreto, alt. 135 m., September 1–5, 1929, *E. P. Killip and A. C. Smith 28931* (Herb. Field Mus. No. 607,739, type).

Rudgea retifolia, sp. nov.—Frutex vel arbuscula 3–4.5 m. alta omnino glabra, ramulis gracilibus teretibus viridibus vel olivaceis, internodiis elongatis; stipulae quadratae vel late triangulares 1–1.5 mm. longae, apice aristis paucis crasse subulatis pallidis 1.5–2 mm. longis onustae; folia brevissime petiolata opposita, petiolo crasso supra late sulcato 1–3 mm. longo; lamina subcoriacea anguste oblongo-lanceolata, 5.5–10 cm. longa, 1.8–3.7 cm. lata, longe sensimque acuminata, apice ipso late obtuso, basi anguste obtusa et vulgo inaequalis, supra viridis, interdum lucida, costa venisque conspicuis et interdum prominentibus, subtus pallidior, costa gracili elevata, nervis lateralibus utroque latere c. 9, plus minusve obliquis, angulo angusto adscendentibus, gracillimis et inconspicuis, prominulis, remote a margine conjunctis, in axillis costarum primariarum conspicue domatiata, nervulis prominulis arctissime reticulatis; inflorescentiae terminales et axillares capitatae dense pauciflorae, pedunculis simplicibus vel interdum ramosis 1–2 cm. longis rigidis interdum supra basin bracteatis, floribus arcte sessilibus; hypanthium late obovoid-eum c. 0.5 mm. longum, calyce aequilongo breviter 5-denticulato, dentibus latissime triangularibus obtusis; fructus subglobosus 5–6 mm. longus apice late rotundatus interdum abortu monospermus.—Peru: In forest, Timbuchi, on the upper Río Nanay, Dept. Loreto, June 26, 1929, *Llewellyn Williams 994* (Herb. Field Mus. No. 604,690, type); vernacular name, “amanga.” Iquitos, in woods, alt. 100 m., *Killip & Smith 27195*.

In its foliage *R. retifolia* somewhat resembles the widespread *R. fimbriata* (Benth.) Standl., but in the latter the leaves are broader and the inflorescence is paniculate.

***Rudgea sessiliflora*, sp. nov.**—Frutex ramosus 0.3–1.5 m. altus ut videtur omnino glaber, ramulis gracilibus subteretibus viridibus, internodiis brevibus vel elongatis interdum brevissimis, novellis vulgo raphidibus brevibus pallidis notatis; stipulae deciduae latae 1–2.5 mm. longae apice aristis paucis subulatis crassiusculis pallidis 1–1.5 mm. longis onustae; folia breviter petiolata opposita, petiolo gracili 3–6 mm. longo saepe usque ad basin anguste marginato; lamina membranacea oblongo-lanceolata vel anguste elliptico-lanceolata, 4.5–8.5 cm. longa, 1.5–3 cm. lata, longe angustaque acuminata, acumine obtusiusculo, basin versus longe sensimque vel interdum abrupte angustata, supra in sicco pallide viridis, costa venisque vix prominentibus, subtus fere concolor, costa gracillima prominente, nervis lateralibus utroque latere c. 7, obliquis, gracillimis, prominulis, remote a margine laxae conjunctis, nervulis inconspicuis laxae reticulatis; inflorescentiae plerumque terminales capitatae dense pauciflorae corollis exclusis c. 6 mm. latis, floribus arcte sessilibus; hypanthium late obovoideum c. 0.6 mm. longum, calyce viridi cupulari c. 1 mm. longo et 2 mm. lato, obsolete et brevissime 5-denticulato, disco crasso tumido; fructus subglobosus albus c. 1 cm. longus apice calyce persistente coronatus.—Peru: In dense forest, Soledad, on Río Itaya, Dept. Loreto, alt. 110 m., September 20–22, 1929, *E. P. Killip and A. C. Smith 29698* (Herb. Field Mus. No. 607,454, type), 29575 (U. S. Nat. Herb.). San Antonio, on Río Itaya, in dense forest, 110 m., *Killip & Smith 29524* (U. S. Nat. Herb.). Puerto Bermúdez, Dept. Junín, in dense forest, 375 m., July, 1929, *Killip & Smith 26666* (U. S. Nat. Herb.).

Similar to *R. retifolia* Standl., but in that the flower heads are long-stalked.

***Rudgea Woronovii* Standl.** Field Mus. Bot. 7: 155. 1930.

The type was collected in the Territory of Caquetá, Colombia, but the species occurs also in Peru, as indicated by recent collections: Peru: Along the Río Nanay, Dept. Loreto, June 28, 1929, *Llewellyn Williams 1077, 1081*; growing in forest.

***Rudgea psychotriaefolia*, sp. nov.**—Frutex 2.5–3 m. altus, ramulis crassiusculis subteretibus fusco-viridibus glabris, internodiis modice elongatis; stipulae subpersistentes erectae rigidae late ovatae 8–11 mm. longae glabrae multinerviae profunde pectinato-laciniatae; folia breviter petiolata opposita, petiolo crassiusculo 6–10 mm. longo glabro; lamina papyracea obovata vel oblongo-obovata 9–15 cm. longa, 4–7 cm. lata, abrupte acuminata, acumine angusto attenuato obtuso, basin versus cuneatim angustata, basi ipsa acuta, supra fusco-viridis, glabra, costa angustissime sulcata, venis non elevatis,

subtus paullo pallidior, praesertim ad venas minutissime pulverulacea vel glabra, costa valida elevata, nervis lateralibus utroque latere c. 10 gracilibus, prominentibus, obliquis, angulo lato adscendentibus, arcuatis, infimis angulo fere recto abeuntibus, omnibus juxta marginem conjunctis, nervulis vix prominulis laxe reticulatis; inflorescentia terminalis cymoso-paniculata 1 cm. longe pedunculata, c. 2 cm. longa et aequilata, densissime multiflora, basi digitato-ramosa, ramis crassis 5–6 mm. longis glabris, floribus sessilibus vel subsessilibus dense congestis, bracteis minutis late triangularibus acutis glabris; hypanthium late cylindraceo-turbinatum 1.2 mm. longum glabrum, calyce brevissimo c. 0.5 mm. longo remote denticulato; corolla pallide lutea in alabastro obtusa, supra sparse et minute puberula, tubo crassiusculo 8 mm. longo superne paullo sensimque dilatato, lobis 4 patentibus oblongis obtusis 4 mm. longis; stylus breviter exsertus.—Peru: In dense forest, Yurimaguas, lower Río Huallaga, Dept. Loreto, alt. 135 m., August 23–September 7, 1929, *E. P. Killip and A. C. Smith 29016*, (Herb. Field Mus. No. 607,744, type).

Similar to *R. Woronovii* Standl., which has large leaves with numerous veins, and a large and lax inflorescence.

Rudgea justicioides, sp. nov.—Frutex 1.5–2 m. altus ramosus, ramis gracilibus teretibus viridibus vel olivaceis glabris, novellis rigidis interdum compressis, internodiis brevibus vel elongatis; stipulae brevissime connatae 3.5–5 mm. longae persistentes erectae virides bifidae, basi aristis paucis pallidis subulatis brevibus auctae, laciniis lineari-subulatis rigidis angustissimis; folia brevissime petiolata opposita, petiolo crassiusculo 1–3 mm. longo supra leviter sulcato glabro; lamina firme membranacea elliptica vel oblongo-elliptica, rarius lanceolato-oblonga, 6.5–12.5 cm. longa, 2.5–5.5 cm. lata, breviter vel longius et abrupte acuminata, acumine angusto attenuato-acuto, basi acuta vel interdum basin versus longius acuminata, basi ipsa interdum obtusiuscula, supra laete viridis, glabra, costa prominente, venis saepe manifestis sed non elevatis, subtus paullo pallidior, ad costam sparse et minutissime puberula vel omnino glabra, costa gracili elevata, nervis lateralibus utroque latere c. 8 prominentibus, gracillimis, obliquis, arcuatis, marginem attingentibus, nervulis prominulis laxe reticulatis; inflorescentiae terminales capitatae dense pauciflorae crasse 3–4 mm. longe pedunculatae, bracteis numerosis intense purpureis arcte involucretae, bracteis exterioribus oblongis vel oblongo-ovatis 1.5–2 cm. longis acutis vel acuminatis erectis sparse minuteque puberulis vel fere glabris multinerviis et conspicue reticulato-venosis, floribus arcte sessilibus, bracteis interioribus lineari-lanceolatis paullo brevioribus; hypanthium minutum glabrum, calyce glabro 3.5–4 mm. longo tubuloso 1.5 mm. lato apice minute denticulato; corolla alba extus glabra, tubo cylindraceo 10 mm. longo et fere 2 mm. crasso, lobis oblongis acutiusculis c. 5 mm. longis patentibus; fructus intense caeruleus ovalis 7–9 mm. longus calyce persistente coronatus 2-ocularis.—Peru: Río Masana, Dept. Loreto,

May 8, 1929, *Llewelyn Williams 163* (Herb. Field Mus. No. 601,966, type). San Antonio, on Río Itaya, Dept. Loreto, 110 m., in dense forest, September 18, 1929, *Killip & Smith 29331, 29354*.

In its conspicuous involucre of large colored bracts this species is quite unlike any other of which I have seen material.

***Rudgea loretensis*, sp. nov.**—Frutex 1-3-metralis, ramulis crassiusculis subteretibus, novellis viridibus glabris, internodiis plerumque abbreviatis; stipulae persistentes suberectae late ovatae vel subrotundatae fere liberae 6-10 mm. longae pallidae obtusae et apiculatae dorso prope apicem aculeolis paucis brevibus onustae; folia breviter petiolata opposita, petiolo crasso 4-6 mm. longo glabro; lamina crasse membranacea late elliptica, elliptico-oblonga, lanceolato-ovata vel lanceolato-oblonga, 11-20 cm. longa, 4-11.5 cm. lata, longe angustiusque acuminata, saepe longissime attenuato-acuminata, basi acuta, glabra, supra in sicco pallide viridis vel fusca, costa venisque non elevatis, subtus fere concolor, costa gracili elevata, in axillis domatata, nervis lateralibus utroque latere c. 9 valde obliquis, gracilibus, prominentibus, leviter arcuatis, juxta marginem conjunctis; inflorescentia terminalis cymoso-paniculata laxa pauciflora basi trichotoma, e cymulis 3-9 trifloris composita, 3-4.5 cm. longa et aequilata, 1.5-2.5 cm. longe pedunculata, ramis crassis subcompressis suberectis glabris, bracteis minutis late triangularibus acutis, floribus sessilibus; hypanthium late turbinatum 2.5-3 mm. longum minutissime pulverulentum, calyce aequilongo late campanulato brevissime et latissime lobulato, lobis apiculatis; corolla in alabastro late obtusa alba extus minutissime pulverulenta vel glabrata, tubo crassiusculo 12 mm. longo c. 2.2 mm. lato supra vix dilatato, lobis 5 anguste oblongis obtusis c. 7 mm. longis recurvis.—Peru: In forest, Caballo Cocha, on the Amazon River, Dept. Loreto, August 11, 1929, *Llewelyn Williams 2484* (Herb. Field Mus. No. 604,470, type); also *Nos. 2233 and 2505*, from the same locality. In forest, La Victoria, on the Amazon, Dept. Loreto, August, 1929, *Williams 2877, 2618, 2841*. Dense forest, Balsapuerto, Lower Río Huallaga basin, Dept. Loreto, 150-350 m., *Killip & Smith 28567*. Iquitos, Dept. Loreto, in woods, 100 m., August, 1929, *Killip & Smith 27450*.

***Rudgea cephalantha*, sp. nov.**—Frutex 1-3-metralis vel arbuscula, ramulis teretibus vel saepe subcompressis gracilibus glabris flavo-viridibus vel olivaceis, internodiis plerumque elongatis; stipulae virides suberectae persistentes late ovatae vel subrotundatae 4-5 mm. longae cuspidatae glabrae, dorso aculeolis numerosis crassiusculis brevibus vel elongatis subulatis pallidis onustae; folia breviter vel brevissime petiolata opposita, petiolo crassiusculo glabro 2-4 (rare usque ad 10) mm. longo; lamina crasse membranacea ovato-oblonga, oblongo-lanceolata vel rarius anguste elliptico-oblonga, 6.5-19 cm. longa, 2-6.5 cm. lata, longe acuminata, acumine attenuato interdum subfalcato, basi acuta vel acuminata, saepe paullo supra basin subcontracta, supra viridis, glabra, costa venisque inter-

dum prominentibus, subtus paullo pallidior, glabra, in axillis domatata, costa gracili elevata, nervis lateralibus utroque latere c. 10 obliquis, gracillimis, prominulis, angulo lato adscendentibus, prope marginem conjunctis, nervulis inconspicuis vix prominulis laxè reticulatis; inflorescentiae capitatae dense multiflorae subglobosae c. 1 cm. diam. terminales 1-3 cm. longe pedunculatae, pedunculo rigido recto glabro vel rarius sparse minuteque puberulo, bracteis brevibus lanceolatis vel ovatis acutis vel obtusis plerumque hypanthio brevioribus, floribus sessilibus; hypanthium late turbinato-obovoideum 1.2 mm. longum glabrum, calyce c. 0.8 mm. longo late campanulato viridi subtruncato vel remote et irregulariter dentato; corolla extus glabra vel apice obscure puberula in alabastro obtusa, tubo crasso 3 mm. longo, lobis 5 patentibus oblongis versus apice paullo angustatis obtusis, fauce dense albo-barbata; antherae semiexsertae; fructus globosus vel didymo-globosus albus c. 5 mm. longus et 6 mm. latus. —Peru: In forest, Caballo Cocha on the Amazon River, Dept. Loreto, August 1, 1929, *Llewelyn Williams 2228* (Herb. Field Mus. No. 604,540, type). In forest, Río Nanay, Dept. Loreto, June 15, 1929, *Williams 766*; vernacular name "sanango del bajo." Halfway up the Río Nanay, June 14, 1929, *Williams 729*. Mishuyacu, near Iquitos, Dept. Loreto, 100 m., in forest, in 1929, *G. Klug 278, 306*. Yurimaguas, lower Río Huallaga, Dept. Loreto, 135 m., in dense forest, in 1929, *Killip & Smith 28023*. Peña Blanca, on Río Itaya, Dept. Loreto, 110 m., in dense forest, September, 1929, *Killip & Smith 29646*.

Rudgea Dahlgrenii, sp. nov.—Omnino glabra; rami subteretes ochracei vel albidī, ramulis rigidis rectis flavo-viridibus, internodiis 4-8 cm. longis; stipulae erectae persistentes 1.5-4 mm. longae dorso ubique aculeolis pallidis subulatis brevibus dense onustae; folia brevissime petiolata opposita, petiolo 1-2 mm. longo; lamina coriacea late elliptica, elliptico-oblonga vel elliptico-ovata 3.5-8.5 cm. longa, 2-5 cm. lata, acuta, basi obtusa vel anguste rotundata et brevissime subcordata, supra flavo-viridis, costa venisque prominentibus, subtus fere concolor, costa crassa elevata, nervis lateralibus utroque latere c. 9 prominentibus, gracilibus, subobliquis, angulo lato adscendentibus, leviter arcuatis, prope marginem conjunctis, nervulis prominulis arcte et eleganter reticulatis, margine plano; inflorescentia terminalis cymoso-paniculata corymbiformis laxè pauci- vel multiflora, 2.5-3.5 cm. longa et 2.5-5 cm. lata, 1-1.8 cm. longe pedunculata, basi trichotoma, ramis valde adscendentibus rigidis divel trichotomis, cymulis trifloris, floribus sessilibus, bracteis minutis late triangularibus acutis; hypanthium late turbinatum 1 mm. longum, calyce late campanulato viridi 1.2 mm. longo truncato vel obsolete repandodenticulato; corolla in alabastro 4-5 mm. longa extus minutissime pulverulenta apice rotundata, lobis tubo multo longioribus; fructus ovalis vel subglobosus 5-6 mm. longus 1-2-spermus, pyrenis dorso obtuse tricostatis.—Brazil: Boa Vista, on the Tapajoz River, State of Pará, May-June, 1929, *B. E. Dahlgren and E. Sella 95* (Herb. Field Mus. No. 600,768, type).

A well-marked species, noteworthy for its subsessile rigid leaves, and for the compact, corymbosely branched inflorescence.

Rudgea macroceras, sp. nov.—Praeter flores omnino glabra, ramulis gracillimis subteretibus pallide viridibus, internodiis plerumque 1.5–2.5 cm. longis; stipulae persistentes erectae viridescentes in vaginam 1.5 mm. longam truncatam adpressam connatae, vagina in lacinias 4 subulatas erectas 1.5–2 mm. longas desinente; folia breviter petiolata opposita, petiolo crassiusculo 2–3 mm. longo; lamina firme membranacea lanceolato-oblonga vel anguste elliptico-oblonga 3.5–5 cm. longa, 1–1.4 cm. lata, longe sensimque acuminata, acumine angusto longe attenuato apice acutissimo, basin versus breviter angustata, supra viridis, costa elevata, venis non elevatis, subtus pallidior, costa gracili elevata, nervis lateralibus utroque latere c. 9 subobliquis, angulo lato adscendentibus, inaequalibus, pallidis, prominulis, gracilibus, juxta marginem conjunctis, nervulis pallidis prominulis laxè reticulatis; flores terminales solitarii intra stipulas sessiles; hypanthium 1 mm. longum glabrum, calyce campanulato 1.7 mm. longo glabro fere ad medium multifido, laciniiis subulatis attenuatis; corolla extus subsparsè furfuraceo-puberula, tubo crassiusculo 7–8 mm. longo superne vix dilatato fauce 2.5 mm. lato, lobis 4 mm. longis adscendentibus apice appendice cornuto curvo 2–2.5 mm. longo auctis; stylus subexsertus.—Brazil: Alto da Serra, State of São Paulo, February 20, 1919, *F. C. Hoehne 4502* (Herb. Berol., type).

The generic position of this plant is somewhat uncertain, since the stipules are not of the type usually found in the genus *Rudgea*. The form of the corolla, however, indicates that its reference to this group is probably justified, and the general appearance of the plant is similar to that of various other species of *Rudgea*.

Rudgea Catharinae, sp. nov.—Frutex, ramulis gracilibus subteretibus, vetustioribus ochraceis, novellis olivaceis interdum subcompressis minutissime puberulis, internodiis elongatis; stipulae persistentes et plus minusve induratae in vaginam 1.5–2 mm. longam connatae, apice setis numerosis 1.5–2 mm. longis subulatis pallidis cito deciduis dense onustae; folia breviter petiolata opposita, petiolo crassiusculo 3–6 mm. longo minute puberulo vel glabrato; lamina crasse membranacea elliptico-oblonga usque ad elliptica 7.5–12 cm. longa, 3–5.5 cm. lata, abrupte acuminata vel caudato-acuminata, acumine angusto attenuato obtuso, basi acuta vel basin versus breviter vel longius angustata, supra fusco-viridis, glabra, costa venisque non elevatis, subtus pallidior, in axillis venarum conspicue excavata, costa gracili elevata, nervis lateralibus utroque latere c. 10 obliquis, angulo semirecto vel latiore abeuntibus, gracilibus, prominentibus, valde arcuatis, juxta marginem conjunctis, nervulis prominulis laxè reticulatis; inflorescentia terminalis 5–10 mm. longe pedunculata e cymulis paucis parvis dense multifloris racemose dispositis composita, interdum umbelliformis, 1.5–2.5 cm. longa et 1.5–2 cm.

lata, ramis crassis minutissime puberulis basi bracteatis, bracteis rotundato-ovatis acutis vel acuminatis 1-1.5 mm. longis, floribus arcte sessilibus; hypanthium ut calyx minutissime puberulum vel fere glabrum late obovoideum 0.8 mm. longum, calyce late campanulato c. 0.6 mm. longo remote acuteque denticulato; corolla 4 mm. longa extus minutissime puberula vel fere glabra in alabastro apice rotundata, tubo brevi latoque in fauce dense albo-barbato, lobis 5 patentibus vel subrecurvis triangulari-oblongis tubo aequilongis obtusis; antherae subexsertae.—Brazil: In forest behind the Catholic church, Blumenau, Prov. Santa Catharina, October, 1888, *E. Ule 1041* (U. S. Nat. Herb., type; duplicate in Herb. Berol.).

***Rudgea malpighiacea*, sp. nov.**—Praeter inflorescentiam omnino glabra, ut videtur dense ramosa, ramulis gracilibus teretibus olivaceis striatis, internodiis valde abbreviatis; stipulae persistentes in vaginam truncatam 1.5-2 mm. longam laxam connatae, vagina primo apice aristis paucis brevibus subulatis cito deciduis onusta; folia breviter petiolata opposita, petiolo gracili 2-3 mm. longo; lamina firme membranacea obovata vel oblongo-obovata 3-4.5 cm. longa, 1-2 cm. lata, acutiuscula vel obtusa, interdum rotundata et breviter protracta, basin versus cuneato-angustata, supra viridis, costa prominula, venis obscuris, subtus paullo pallidior, costa gracillima elevata, nervis lateralibus utroque latere c. 8 angulo latiusculo abeuntibus, prominulis, gracilibus, fere rectis sed versus marginem abrupte arcuatis, prope marginem conjunctis, nervulis vix prominulis laxe reticulatis; inflorescentia terminalis parva c. 4 mm. longe pedunculata, e cymulis 3 brevissime pedunculatis dense paucifloris et fere capitato-congestis composita, vix 1 cm. longa, bracteis viridibus ovatis 0.7 mm. longis, floribus sessilibus vel 0.5 mm. longe pedicellatis; hypanthium obovoideum minutissime pulverulaceum 0.7 mm. longum, calyce subtruncato hypanthio brevior; corolla extus glabra vel microscopice pulverulacea in alabastro apice rotundata et nuda 4 mm. longa oblongo-obovoides, lobis brevissimis late ovatis; cetera ignota.—Brazil: Forests of the Rio Grongogy Basin, State of Bahia, alt. 100-500 m., in 1915, *H. M. Curran 226* (U. S. Nat. Herb., type).

Noteworthy for the small, blunt leaves and the much-reduced inflorescence.

***Rudgea eugenioides*, sp. nov.**—Frutex ut videtur dense ramosus, ramulis gracilibus subteretibus, vetustioribus ochraceis, novellis viridescentibus minutissime puberulis vel glabris, internodiis brevibus; stipulae persistentes c. 1 mm. longae glabrae in vaginam truncatam connatae, basi primo setulis paucis pectinatim dispositis subulatis brevibus deciduis dense onustae; folia breviter petiolata opposita, petiolo gracili 3-6 mm. longo glabro; lamina subcoriacea elliptica, elliptico-oblonga vel lanceolato-oblonga, 3-5 cm. longa, 1-2.2 cm. lata, abrupte acuminata vel longiacuminata, acumine angusto longe attenuato apice obtuso, basi acuta vel basin versus breviter angustata, supra viridis, glabra, costa venisque planis, subtus multo pallidior, in axillis excavata et barbata, aliter glabra, costa gracili

elevata, nervis lateralibus utroque latere c. 9 obliquis, angulo semirecto vel latiore abeuntibus, crassiusculis, prominulis, pallidis, prope marginem conjunctis, venulis inconspicuis laxe reticulatis; inflorescentia terminalis parva graciliter 1.5–2.5 cm. longe pedunculata, capituliformis vel cymuloso-umbellata, capitulis c. 7 mm. latis dense paucifloris apice pedunculi sessilibus vel usque ad 1 cm. longe pedunculatis, pedunculo gracili minute puberulo vel fere glabro, ramis basi minute bracteatis, floribus congestis arcte sessilibus; hypanthium ut calyx minute puberulum late turbinatum 1 mm. longum, calyce late campanulato 1.4 mm. longo fere ad medium 5-lobato, lobis late ovatis vel rotundatis apice obtusis vel subrotundatis; corolla extus minute puberula in alabastro apice rotundata et nuda 6 mm. longa, tubo supra sensim dilatato, lobis suberectis oblongis obtusis tubo fere aequilongis.—Brazil: Without definite locality, 1890–91, *A. Glaziov 18298* (Herb. Berol., type, consisting of three sheets of specimens). Alto Marahé, Prov. Rio de Janeiro, 1888–89, *Glaziov 17635* (Herb. Berol.).

The species is noteworthy for its small leaves and for its reduced inflorescence.

***Rudgea organensis*, sp. nov.**—Ramuli crassi (6–10 mm.) ochracei vel fusci saepe lucidi glabri, internodiis brevibus; stipulae persistentes erectae valde incrassatae rotundatae apice cuspidatae glabrae, supra in juventute prope marginem aristis paucis brevibus subulatis onustae; folia petiolata opposita, petiolo 1–2.5 cm. longo crasso glabro supra leviter sulcato; lamina subcoriacea elliptico-obovata 13–25 cm. longa, 7–11 cm. lata, abrupte breviterque cuspidato-acuminata, acumine angusto attenuato, basin versus breviter angustata, basi ipsa acuta vel acuminata, glabra, costa venisque supra vix elevatis, costa subtus elevata crassiuscula, nervis lateralibus utroque latere c. 13 subobliquis, gracilibus, angulo lato adscendentibus, leviter arcuatis, prope marginem conjunctis, nervulis prominulis arcte reticulatis; inflorescentia terminalis cymoso-paniculata, 7–8 cm. longa et aequilata, dense multiflora, 3–4.5 cm. longe pedunculata, basi trichotoma, ramis crassis adscendentibus subcompressis sparse puberulis vel fere glabris, bracteis brevissimis late ovatis acutis inconspicuis, cymulis ultimis plerumque trifloris, floribus arcte sessilibus; hypanthium late obovoideum 3 mm. longum dense puberulum, calyce aequilongo late campanulato dense puberulo profunde et inaequaliter 5-lobato, lobis triangularibus acutis vel acuminatis sinibus latis rotundatis sejunctis; corolla alba in alabastro obtusa extus furfuraceo-puberula in alabastro 2–2.4 mm. longa (aperta non visa), tubo superne dilatato fauce 4–6 mm. lato, lobis c. 6 mm. longis oblongis obtusis.—Brazil: Serra dos Orgaos, Retiro, at 1,300 m., November, 1915, *von Lützelburg 6487* (Herb. Berol., type). Serra dos Orgaos, Morro Assu, 2,000 m., November, 1916, *von Lützelburg 6946* (Herb. Berol.).

***Rudgea inurbana*, sp. nov.**—Frutex 0.5–1.5 m. altus, ramulis gracilibus fusco-olivaceis striatis, densissime pilis patentibus sordidopilosis, internodiis brevibus vel elongatis; stipulae erectae persistentes

7 mm. longae profunde bifidae dense pilosae, segmentis late semiovatis profunde multilaciniatis; folia breviter petiolata opposita, petiolo crassiusculo 3-4 mm. longo dense breviterque piloso; lamina crasse membranacea elliptico-oblonga, elliptica vel ovato-elliptica 5-9 cm. longa, 2-4 cm. lata, interdum spurie et leviter depresso-crenata, acuta, basi acuta vel basin versus breviter angustata, supra in sicco olivacea, ad costam venasque puberula vel pilosa, aliter glabra, costa venisque profunde impressis, subtus fere concolor, ubique dense pilis patentibus sordidis vel fulvescentibus pilosa, costa crassiuscula elevata, nervis lateralibus utroque latere c. 13 obliquis, gracilibus, prominulis, angulo semirecto abeuntibus, subarcuatis, prope marginem conjunctis, nervulis prominulis arcte reticulatis; inflorescentia terminalis capituliformis 2.5-4 cm. longe pedunculata dense multiflora usque ad 1 cm. lata, pedunculo gracili dense piloso, capitulo bracteis foliaceis 4-5 mm. longis late ovatis vel ovato-oblongis obtusis vel acutis dense pilosis arcte fulcrata; hypanthium late turbinatum glabratum fere 1 cm. longum, calyce aequilongo pilosulo profunde 5-fido, laciniis triangularibus acutis ciliatis erectis; corolla extus hispidulo-pilosula, tubo crassiusculo 2.5 mm. longo supra non dilatato, lobis patentibus tubo parum brevioribus triangulari-oblongis acutiusculis intus glabris; antherae semiexsertae; stylus 1.7 mm. longe exsertus.—Brazil: Banks of the Río Negro, Manaos, State of Amazonas, December 24, 1901, *E. Ule* 5976 (Herb. Berol., type).

The species is noteworthy for its abundant spreading dirty pubescence, impressed leaf veins, and small, capitate inflorescence.

Declieuxia stenocardia, sp. nov.—Herba ut videtur perennis fruticulosa e basi densissime ramosa 7-10 cm. alta, caulibus gracilibus subrigidis dense albidohirtellis, internodiis brevibus; stipulae minutissimae fere obsoletae; folia opposita internodiis longiora sessilia crasse coriacea, ovata sed ob margines valde revolutos anguste ovatae et false acuminata, apiculata, basi breviter cordata, suberecta, 3-6 mm. longa, utrinque dense hirtella vel serius glabrata, enervia, supra in parte mediana longitrorsum sulcata; flores terminales solitarii vel paucifasciculati sessiles inter folia fere occulti; hypanthium ut calyx minute hirtellum, calyce 4-partito c. 1 mm. longo, laciniis lineari-subulatis erectis; corolla in alabastro fere 2 mm. longa extus minute puberula, apice obtusa; cetera ignota.—Brazil: Without definite locality, 1891-92, *A. Glaziov* 19460 (Herb. Berol., type).

The species is well marked by its low habit and by the very small, narrowly heart-shaped leaves with their strongly revolute margins.

Tobagoa maleolens Urban, Repert. Sp. Nov. 14: 343. 1916. *Diodia Ottonis* Schum. ex Pittier, Pl. Usual. Venez. 338. 1926.

There is at hand a photograph of a specimen of a Venezuelan plant, from the Berlin Herbarium, bearing the annotation by Schumann "*Diodia Ottonis*, ex affinitate *D. strictae* Miq." Specimens collected in Venezuela by Pittier and sent to Berlin for determination

have been distributed under the same name. This plant is evidently identical with that described by Urban from Tobago under the name *Tobagoa maleolens*. *Tobagoa* has not been reported hitherto from Venezuela. The following specimens have been seen by the writer:

Tobago: Dog River, November, 1889, *Eggers 5783*, type collection (U. S. Nat. Herb.). Louis D'Or, in 1927, *R. O. Williams 11838*.—Venezuela: Caracas, *Otto 673* (fragment and photo. from Herb. Berol.). Caruao, Distrito Federal, in 1925, *Pittier 11935*. Mamo Electric Plant, Distrito Federal, *Pittier 11086*.

***Sherardia arvensis* L.**—Previously I have seen no Peruvian specimens of this introduced European plant, although it is known to grow in Chile. It may be recorded now from Peru: Ocopa, Dept. Junín, April 25, 1929, *E. P. Killip & A. C. Smith 21997*; growing in rocky stream bed at an elevation of 3,300 m.

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THE CYPERACEAE OF CENTRAL AMERICA

PAUL C. STANDLEY

More than ten years ago the writer prepared an account of the sedges of the family Cyperaceae occurring in Central America. Since its compilation the manuscript has been used frequently in the determination of current collections. The keys have been found to be as satisfactory, or as unsatisfactory, as keys usually are in this family, and the descriptions and locality data have proved helpful in making determinations. Therefore it seems worth while to publish the account, which, however, does not pretend to be of a monographic nature.

The 159 Cyperaceae listed here constitute one of the larger families of Central American plants. They are of but slight economic importance, except that some with soft, spongy, and tough stems are utilized generally in this region for weaving the thick mats or pads that serve as mattresses upon the painfully hard Central American beds. Some of the plants doubtless are eaten by stock, with the coarse grasses that accompany them. Several of the sedges are abundant weeds in cultivated ground. Perhaps the majority of the species are inhabitants of cultivated ground or of second-growth thickets, but some are found only in virgin forest or in the delightful meadows of the high mountains, and several others never are seen elsewhere than along the sea beaches or in salt meadows.

The preliminary draft of this paper was prepared before the writer visited Central America. It is a remarkable fact that his own collections, amounting to about 40,000 numbers, and the very extensive series gathered in Central America during the past ten years by other collectors, have added less than ten species to the list of Cyperaceae originally prepared. Evidently most of the species of the area have been collected. Certainly there are many other groups of plants in which the same condition does not prevail, for recent explorations have added hundreds of species, many genera, and even several families to the known Central American flora.

In the Botany of the *Biologia Centrali-Americana* Hemsley listed the Cyperaceae known fifty years ago from Central America. In 1908 C. B. Clarke published (Contr. U. S. Nat. Herb. 10: 443-471) an account of the Costa Rican species of the family. These are the

most important publications dealing with the group as it is represented in the area under consideration.

The writer is indebted to Dr. N. L. Britton, who has given advice regarding certain parts of the present paper, and to Kenneth K. Mackenzie, who has furnished the account of the genus *Carex*.

CYPERACEAE. Sedge Family

Annual or perennial, grasslike or rushlike herbs; stems (culms) solid, triangular, quadrangular, terete, or compressed; leaves narrow, usually with closed sheaths; flowers perfect or unisexual, arranged in spikelets, one in the axil of each scale, the spikelets 1- to many-flowered; scales 2-ranked or spirally imbricate, persistent or deciduous; perianth of bristles or scales, or often absent; stamens 1-3; anthers 2-celled; style 2-3-cleft, rarely simple; fruit an achene.

Flowers partly (the fertile ones) perfect.

Scales of the spikelets 2-ranked; perianth none.

Spikelets with only one perfect flower; spikelets capitate.

1. *Kyllinga*.

Spikelets usually with 2 or more perfect flowers; spikelets variously arranged.....2. *Cyperus*.

Scales spirally imbricate; perianth of bristles often present.

Empty scales at base of the spikelet 1 or 2 or more.

Base of the style persistent upon the achene as a tubercle.

Spikelet one; leaves reduced to sheaths; perianth of bristles usually present.....3. *Eleocharis*.

Spikelets more than one; leaves present; perianth none.
4. *Stenophyllus*.

Base of the style not persistent.

Flowers without inner scales.

Base of the style swollen; bristles none...5. *Fimbristylis*.

Base of the style not swollen; bristles present...6. *Scirpus*.

Flowers with one or more inner scales.

Flowers with 3 broad stipitate scales alternating with bristles.....7. *Fuirena*.

Flowers with 1 or 2 hyaline scales and no bristles.

Inner scales (2) complicate and connate...8. *Ascolepis*.

Inner scales not complicate, free.

Inner scales 2, convolute.....9. *Lipocarpa*.

Inner scale 1, minute10. *Hemicarpa*.

Empty scales at the base of the spikelet 3 or more.

Style 3-cleft.

Fertile flower axillary; plants large 11. *Mariscus*.

Fertile flower pseudo-terminal; plants small . . 12. *Remirea*.

Style 2-cleft.

Spikelets compressed, clustered in a single head; bristles none 13. *Dichromena*.

Spikelets not compressed, usually paniculate or corymbose; bristles usually present 14. *Rynchospora*.

Flowers all unisexual.

Pistillate flower enclosed in a utricle.

Utricle enclosing a long uncinatè bristle 20. *Uncinia*.

Utricle enclosing only the pistil 21. *Carex*.

Pistillate flowers not enclosed in a utricle.

Fertile flowers in each spikelet often more than one, each subtended by a scale, lateral.

Fertile flower basal 15. *Scleria*.

Fertile flower terminal 16. *Calyptracarya*.

Fertile flower in each spikelet one, naked, terminal.

Spikelets in umbellate or paniculate spikes.

Spikes of spikelets about 5 mm. long; flowers 3 in each spikelet 17. *Hypolytrum*.

Spikes 15-30 mm. long; flowers 6-9 in each spikelet.

18. *Diplasia*.

Spikelets crowded in dense heads of spikes . . . 19. *Mapania*.

1. KYLLINGA Rottb.

Plants annual or perennial, glabrous or nearly so; culms triangular, leafy below, the leaves sometimes reduced to sheaths; inflorescence terminal, consisting of 1-3 more or less confluent heads, the heads usually involucrate; spikelets composed of 3-4 scales, only the middle one fertile, the scales 2-ranked, keeled; perianth none; stamens 1-3; style bifid; achene lenticular.—About 45 species, widely distributed in temperate and tropical regions.

Head of spikelets not involucrate 1. *K. nudiceps*.

Head of spikelets subtended by involucre of one or more leaflike bracts.

Plants annual or biennial; rootstocks very short or none, the culms cespitose.

Fertile scale scabrous-ciliate on the keel, eglandular.

2. *K. pumila*.

Fertile scale smooth on the keel, bearing scattered red glands.
3. *K. odorata*.

Plants perennial, usually with stout elongate rootstocks, the culms not cespitose.

Leaf blades absent, the sheaths scarious, colored.

4. *K. peruviana*.

Leaf blades present, the sheaths scarcely scarious, not colored.

Leaves abruptly narrowed, much shorter than the stout culms.

5. *K. pungens*.

Leaves long-attenuate, nearly equaling the slender culms.

6. *K. brevifolia*.

1. **Kyllinga nudiceps** Clarke ex Standl. Field Mus. Bot. 4: 199. 1929.

Cocos Island, Costa Rica; endemic; type, *Pittier 16272*.

Plants erect, with short, horizontal or ascending rhizomes; culms slender, 20–50 cm. long, less than 1 mm. thick, striate, glabrous; leaves all reduced to sheaths, these purplish, 7 mm. long or less; head solitary, naked, subglobose, 5–6 mm. broad; fertile scale navicular, ovate, acute, brown-dotted, the keel smooth.

2. **Kyllinga pumila** Michx. Fl. Bor. Amer. 1: 28. 1803. *K. caespitosa* Nees in Mart. Fl. Bras. 2: 12. 1842.

Guatemala; Honduras; Salvador; Nicaragua; Costa Rica; Panama; in moist soil, often a weed in cultivated ground, ranging from sea level to 1,800 m. Widely distributed in North and South America; also in Africa.

Plants annual, cespitose, 5–40 cm. high, the culms slender; leaf blades well developed, usually shorter than the culm, 2–3 mm. wide; heads 1–3, ovoid or cylindric, 5–10 mm. long; bracts 3–4, 8 cm. long or less.

3. **Kyllinga odorata** Vahl, Enum. Pl. 2: 382. 1806.

Guatemala; Honduras; Costa Rica; Panama; in wet soil, ranging from sea level to 1,500 m. Southern United States and Mexico; West Indies and South America.

Plants annual or biennial, cespitose, the culms 10–40 cm. long, slender; leaves shorter than the culms, 2–4 mm. wide; heads 1–3, ovoid or cylindric, 15 mm. long or less; bracts 3–4, 8 cm. long or shorter.

4. **Kyllinga peruviana** Lam. Encycl. 3: 366. 1789. *K. vaginata* Lam. Ill. Gen. 1: 148. 1791. *Mariscus aphyllus* Vahl, Enum. Pl. 2: 373. 1806. *K. aphylla* Kunth, Enum. Pl. 2: 127. 1837.

British Honduras; Guatemala; Honduras; Nicaragua (according to Hemslley); Costa Rica; Panama; in wet soil along the coast, usually growing in beach sand. West Indies, South America, and tropical America generally.

Leaves all reduced to loose sheaths; culms stout, 20-50 cm. high; bracts usually shorter than the head; head one, 1 cm. or less in diameter.

5. *Kyllinga pungens* Link, Hort. Berol. 1: 326. 1827.

Guatemala; Honduras; Salvador; Costa Rica; Panama; in wet soil on or near sea beaches. Porto Rico; South America; Africa and Asia.

Lower leaves reduced to loose sheaths, the upper ones bearing short blades about 4 mm. wide; culms 10-40 cm. high, stout, the bracts 1-6 cm. long; head one, globose, 6-9 mm. in diameter.

6. *Kyllinga brevifolia* Rottb. Descr. & Icon. 13. pl. 4, f. 3. 1773.

Guatemala; Honduras; Salvador; Panama; in wet soil, ranging from sea level to 2,400 m. Widely distributed in the warmer regions of both hemispheres.

Rhizomes often much elongate; leaves 2-4 mm. wide; culms 10-40 cm. long, slender; bracts 3-4, 12 cm. long or less; heads 1-3, ovoid or short-cylindric, 7-12 mm. long; scales usually scabrous along the keel.

2. CYPERUS L.

Annuals or perennials, the culms simple, usually triangular and leafy; inflorescence involucrate, capitate or umbellate; spikelets flat or subterete, few- or many-flowered, the rachis often winged, the scales concave, conduplicate or carinate, 2-ranked; flowers perfect; perianth none; stamens 1-3; style 2-3-cleft; achene lenticular or 3-angulate.---About 600 species, in tropical and temperate regions.

Style 2-cleft.

Surface of the achene transversely undulate-lineate, the cells longitudinally oblong.....1. *C. flavescentis*.

Surface of the achene not transversely undulate, the cells quadrate.

Spikelets about 5 mm. wide.....2. *C. unioides*.

Spikelets 1.5-3 mm. wide.

Spikelets yellowish or greenish.

Spikelets about 1.5 mm. wide.

Spikelets densely spicate, ascending, the scales closely appressed.....3. *C. odoratus*.

Spikelets laxly spicate, spreading, the scales not appressed.

Scales acute; plants perennial.....4. *C. paniculatus*.

Scales obtuse; plants annual.....5. *C. fugax*.

Spikelets 2-3 mm. wide.

Clusters of spikelets crowded into a single head.

6. *C. Olfersianus*.

Clusters of spikelets umbellate 7. *C. Humboldtianus*.
 Spikelets chestnut-brown or spotted with chestnut.

Plants perennial; spikelets in dense headlike spikes.
 8. *C. melanostachyus*.

Plants annual; spikelets in loose spikes 9. *C. lagunetto*.

Style 3-cleft.

A. Rachilla of the spikelet deciduous.

Rachilla breaking up into 1-fruited joints.

Spikelets about 3 mm. thick 10. *C. Hayesii*.

Spikelets 1-1.5 mm. thick.

Spikelets loosely spicate 11. *C. ferax*.

Spikelets crowded into a few dense heads.
 12. *C. oxycarioides*.

Rachilla not breaking up into joints.

Spikelets usually containing 5-10 nutlets.

Spikelets brown or reddish.

Leaves 5-6 mm. wide 13. *C. brunneus*.

Leaves 15-20 mm. wide 14. *C. saturatus*.

Spikelets yellowish or greenish.

Spikelets crowded in a dense head 15. *C. divergens*.

Spikelets loosely spicate.

Spikelets stout, 1.5-2 mm. thick . 16. *C. panamensis*.

Spikelets almost filiform 17. *C. caracasanus*.

Spikelets containing 1-4 nutlets.

Spikes of the rays digitately compound.

Spikes 8 mm. or less in diameter, comparatively lax.
 18. *C. incompletus*.

Spikes more than 10 mm. in diameter, very dense.
 19. *C. ligularis*.

Spikes of the ray simple.

Spikelets crowded into a dense rounded head.
 15. *C. divergens*.

Spikelets in umbellate spikes.

Spikelets containing a single achene . . . 20. *C. Haenkei*.

Spikelets containing 2 or more achenes.

Spikes very short, headlike 21. *C. globulosus*.

Spikes elongate, cylindric.

Lowest empty scale much shorter than the upper ones.....22. *C. cyperoides*.

Lowest empty scale equaling or exceeding the others.

Spikelets very dense, the spikelets ascending, turgid.....23. *C. cayennensis*.

Spikelets lax, the spikelets divaricate, not turgid.

Spikelets digitate.....24. *C. hermaphroditus*.

Spikelets subumbellate.....25. *C. Meyenianus*.

AA. Rachilla of the spikelet persistent.

B. Spikelets spicate.

Stamens persistent, elongate in age.....26. *C. prolixus*.

Stamens deciduous, not elongate in age.

Culms terete or nearly so, naked.

Culms septate; bracts scalelike.....27. *C. articulatus*.

Culms not septate; bracts long, leaflike.....28. *C. giganteus*.

Culms 3-angled, leafy, at least below.

Spikelets purple or castaneous.....29. *C. rotundus*.

Spikelets green, yellow, or yellow-brown.

Spikelets 5-8 mm. long.

Spikelets 12-20-flowered.....30. *C. radiatus*.

Spikelets mostly 3-5-flowered.....31. *C. spectabilis*.

Spikelets 10-20 mm. long or longer.

Scales acute or acuminate.....32. *C. compressus*.

Scales obtuse.

Spikelets about 1 mm. wide.....33. *C. distans*.

Spikelets 1.5-2 mm. wide.

Rachilla winged; plants perennial.

34. *C. esculentus*.

Rachilla not winged; plants annual.

35. *C. sphacelatus*.

BB. Spikelets digitate or capitate.

Spikelets crowded in a single dense head.

Scales obtuse, white.....36. *C. tenerimus*.

Scales acute, green.....37. *C. humilis*.

Spikelets not in a single head.

Plants annual.

Scales green.....32. *C. compressus*.

Scales brown or reddish.....38. *C. uncinatus*.

Plants perennial.

Culms leafless.....39. *C. canus*.

Culms leafy below.

Spikelets mostly ovate, the scales usually obtuse.

Leaves appearing lineolate because of the transverse
septa.....40. *C. virens*.

Leaves not transverse-septate.

Spikelets ovate.

Spikelets in very dense, subglobose heads.

41. *C. Luzulae*.

Spikelets in loose heads...42. *C. surinamensis*.

Spikelets linear-oblong or oblong-lanceolate.

43. *C. ochraceus*.

Spikelets linear or oblong, several times as long as
broad, the scales acute or acuminate.

Stamen 1; culm shorter than the rays of the umbel.

44. *C. simplex*.

Stamens 2-3; culms longer than the rays of the
umbel.

Spikelets 1-2 mm. wide.

Scales closely appressed and imbricate.

45. *C. haspan*.

Scales loose, distant.....46. *C. chorisanthus*.

Spikelets 2-3 mm. wide.

Spikelets green.

Leaves flat.....47. *C. diffusus*.

Leaves convolute.....48. *C. elegans*.

Spikelets vinaceous.....49. *C. nubigenus*.

1. *Cyperus flavescens* L. Sp. Pl. 46. 1753. *Pycreus flavescens* Beauv. ex Reichenb. Fl. Excurs. 1: 72. 1830-32. ?*C. squalidus* Liebm. Dansk. Vid. Selsk. Skrivt. V. 2: 199. 1851. *C. Durandii* Boeckl. Allgem. Bot. Zeitschr. 1: 185. 1895. *C. Tonduzianus* Boeckl. op. cit. 187. 1895.

Honduras; Nicaragua; Costa Rica; Panama; in fields or moist soil, sometimes growing in pine forest, ranging from sea level to 1,400 m. Tropical and temperate regions of both hemispheres.

Plants annual, the culms tufted, very slender, 2-30 cm. long; leaves 1-2 mm. wide; bracts longer than the umbel; spikelets 5-20

mm. long, 2-3 mm. wide, yellowish, digitate or short-spicate; scales obtuse, closely appressed; achene obovoid, blackish.

Cyperus squalidus and *C. Durandii* were described from San José, Costa Rica, and *C. Tonduzianus* from Costa Rica.

2. *Cyperus unioides* R. Br. Prodr. Fl. Nov. Holl. 216. 1810. *C. bromoides* Link, Jahrb. 3: 85. 1820. *Pycnus angulatus* Nees, Linnaea 9: 283. 1834.

Guatemala; Nicaragua; Costa Rica; Panama; in swamps, at about 1,300 m., and probably also at lower elevations. Mexico; Cuba and Hispaniola; South America; Asia, Africa, and Australia.

Plants with elongate rhizomes; culms slender, 30-100 cm. high; leaves 2-5 mm. wide; bracts long and leaflike; spikelets 10-15 mm. long, yellowish, short-spicate and umbellate or in a single dense cluster; scales acute, closely appressed; achene obovoid, compressed, black, smooth.

3. *Cyperus odoratus* L. Sp. Pl. 46. 1753. *Pycnus polystachyus* Beauv. Fl. Owar. 2: 48. pl. 86, f. 2. 1807. *C. polystachyus* R. Br. Prodr. Fl. Nov. Holl. 214. 1810. *P. odoratus* Urban, Symb. Antill. 2: 164. 1900.

Panama; growing in ditches near sea level. Tropical regions of both hemispheres.

Plants usually with fibrous roots, the culms 20-80 cm. high; leaves 2-5 mm. wide; spikelets spicate, 1-2 cm. long, stramineous, the scales acutish; achene oblong, compressed, blackish.

4. *Cyperus paniculatus* Rottb. Descr. & Icon. 40. 1773.

Guatemala; Honduras; Salvador; Panama; at 900 m. or less, in moist fields or on sandy flats. Mexico, Cuba, Jamaica, and South America; also in the Old World.

Plants annual, the culms very slender, tufted, 2-15 cm. high; leaves 1-1.5 mm. wide; spikelets in short lax umbellate spikes, linear, 5-12 mm. long, the scales very obtuse, green or brownish; bracts long and leaflike; achenes obovoid-oblong, blackish.

Called "pelillo" in Salvador.

5. *Cyperus fugax* Liebm. Dansk. Vid. Selsk. Skrivt. V. 2: 196. 1851.

Salvador; Costa Rica; in sand at low elevations. Mexico; Jamaica.

A small tufted annual about 5 cm. high; leaves narrowly linear; umbel few-rayed, the rays very short, the few spikelets spreading, in short lax spikes; bracts longer than the umbel; spikelets linear, 6-12 mm. long, greenish, 10-18-flowered, the scales obliquely spreading, apiculate; achene compressed, obovate, castaneous, obtuse and apiculate, obscurely puncticulate.

6. *Cyperus Olfersianus* Kunth, Enum. Pl. 2: 10. 1837. *Pycreus propinquus* Nees in Mart. Fl. Bras. 2: 7. 1842.

Salvador; Costa Rica; Panama; in wet soil. Mexico, West Indies, and South America; Africa.

Plants with slender rhizomes, the culms slender, tufted, 20–80 cm. long; leaves 1–3 mm. wide; bracts about 3, 15 cm. long or less; spikelets in a single head, 1–2 cm. long, yellowish, linear, the scales obtuse; achene obovoid, smooth, castaneous.

7. *Cyperus Humboldtianus* Schult. in R. & S. Syst. Veg. 2: Mant. 100. 1824. *C. densus* Link, Jahrb. 3: 83. 1820, non R. Br. 1814. *C. helvus* Liebm. Dansk. Vid. Selsk. Skrivt. V. 2: 197. 1851. *Pycreus helvus* Clarke in Urban, Symb. Antill. 2: 164. 1900. *P. densus* Urban, Symb. Antill. 2: 164. 1900.

Guatemala; Salvador; Costa Rica; in wet soil, at 1,350 m. or less.

Plants perennial, with rhizomes; leaves 2–3 mm. wide; bracts long and leaflike; spikes short and dense, headlike, umbellate; spikelets 4–20-flowered, 1 cm. long or less, the scales obtuse; achene smooth, brown or castaneous.

8. *Cyperus melanostachyus* HBK. Nov. Gen. & Sp. 1: 207. 1815. *C. variegetus* HBK. op. cit. 208. 1815. *C. cimicinus* Presl, Rel. Haenk. 1: 166. 1830. *C. elegantulus* Steud. Flora 25: 583. 1842. *C. diandrus* var. *capitatus* Britton, Bull. Torrey Club 13: 205. 1886. *Pycreus elegantulus* Clarke in Dur. & Schinz, Fl. Afr. 5: 536. 1895. *P. melanostachyus* Clarke, Contr. U. S. Nat. Herb. 10: 446. 1908. *P. melanostachyus* var. *variegatus* Clarke, loc. cit.

Guatemala; Nicaragua; Costa Rica; in moist soil, on wet banks or in pastures, at 300–2,560 m. Southern California and Mexico; South America.

Plants with rhizomes, the culms slender, 10–40 cm. high; leaves 1–2 mm. wide; bracts long and leaflike; spikelets 1 cm. long or less, 2–3 mm. wide, often nearly black, the scales usually closely appressed; achene ellipsoid, castaneous.

Clarke maintained *C. cimicinus* (*C. elegantulus*) as a distinct species, separated by its narrower spikelets, but it does not appear practicable to separate the two forms satisfactorily. The plant is very common in the moist or wet, high mountain pastures of Costa Rica, where it is noticeable because of the dark color of its spikelets.

9. *Cyperus lagunetto* Steud. Syn. Pl. Glum. 2: 5. 1855. *Pycreus lagunetto* Clarke, Contr. U. S. Nat. Herb. 10: 446. 1908.

Guatemala; Costa Rica; in wet soil, often on moist open banks, at 1,000–1,300 m. South America.

Culms densely tufted, 15 cm. high or less; leaves 1–2 mm. wide; umbels very lax, the spikelets usually few, 6–15 mm. long, nearly 3 mm. wide, strongly compressed, the scales obtuse; achene obovoid, smooth, blackish.

10. *Cyperus Hayesii* (Clarke) Standl. Journ. Washington Acad. Sci. 15: 457. 1925. *Torulinium Hayesii* Clarke, Kew Bull. Add. Ser. 8: 20. 1908.

Described from Panama.

Rhizome none; culms 30-60 cm. high; leaves 5-7 mm. wide; spikes 3 cm. long or less, lax, simply umbellate, the spikelets linear, 15 mm. long, containing about 14 achenes, the scales imbricate or obliquely spreading, 3-4 mm. long; achene 2 mm. long, black.

11. *Cyperus ferax* L. Rich. Act. Soc. Hist. Nat. Paris 1: 105. 1792. *Torulinium confertum* Hamilt. Prodr. Ind. Occ. 15. 1825. *Mariscus Pohlianus* Nees in Mart. Fl. Bras. 2: 50. 1842. *C. granadinus* Liebm. Vid. Selsk. Skrivt. V. 2: 224. 1851. *C. laetus* var. *obtusiflorus* Boeckl. Allgem. Bot. Zeitschr. 2: 2. 1896.

British Honduras; Guatemala; Honduras; Salvador; Nicaragua; Costa Rica; Panama; in moist or wet soil, often a weed in cultivated ground, at 1,400 m. or less. Generally distributed in tropical and subtropical regions.

Plants perennial, the culms stout, 15-80 cm. high; leaves 5-7 mm. wide, shorter than the culms; bracts large and leaflike; umbel compound, the spikelets loosely spicate, linear, subterete, 10-15 mm. long or even larger, yellow or brownish, the scales 2 mm. long, striate; rachilla winged; achene black, oblong.

Cyperus granadinus was described from Granada, Nicaragua. *C. Oerstedii* Liebm. (Dansk. Vid. Selsk. Skrivt. V. 2: 224. 1851), described from Segovia, Nicaragua, is referred by Clarke to *C. VahlII* (Nees) Steud., which probably is not distinct from *C. ferax*.

This species is one of the most abundant weeds of Central America, and may be seen almost anywhere at middle and lower elevations, except in virgin forest. The plant is a very variable one. In Salvador it is known by the names "coyolillo" and "zacate de corona," and in Panama as "junco."

12. *Cyperus oxycarioides* Britton, Bull. Torrey Club 11: 86. 1884.

Guatemala (Boca de Polochic, at 60 m.); Honduras (Tela, at sea level). Also in Texas.

Plants annual (?), the culms 50-100 cm. high; leaves 3-8 mm. wide; bracts long and leaflike; spikes very dense and congested, mostly sessile, the spikelets linear, subterete, 6-10 mm. long, 8-12-flowered, the scales 2 mm. long, obtuse, striate; achenes oblong-obovoid, 1.5 mm. long, brown.

13. *Cyperus brunneus* Sw. Fl. Ind. Occ. 1: 116. 1797.

Honduras (Holbox Island). Florida and the West Indies.

Plants with horizontal rhizomes, the culms 10-60 cm. high; leaves often longer than the culms; bracts long and leaflike; umbels few-

rayed, the spikes short and dense, often sessile; spikelets 1 cm. long or less, 2–3 mm. wide, brown, 5–8-flowered, the scales obtuse; achene obovoid, 3-angulate.

14. *Cyperus saturatus* Clarke, Bot. Jahrb. Engler 37: 517. 1906. *Mariscus saturatus* Donn. Smith ex Clarke, Contr. U. S. Nat. Herb. 10: 453. 1908.

Costa Rica, at 250–650 m.; type from Jiménez, Llanos de Santa Clara, on the Atlantic slope.

Plants perennial, stout, the culms about 60 cm. high; leaves large, 3-nerved; bracts long and leaflike; umbel compound, rather dense, the spikelets in clusters of 3–8, reddish brown, 12–20-flowered, 10–15 mm. long and nearly 3 mm. wide, compressed, the scales acute; achene ellipsoid, dark brown.

15. *Cyperus divergens* HBK. Nov. Gen. & Sp. 1: 208. 1815. *C. manimae* HBK. op. cit. 209. 1815. *C. triceps* Nees, Linnaea 19: 697. 1847. *C. asperimus* Liebm. Dansk. Vid. Selsk. Skrivt. V. 2: 30. 1851. *C. apiculatus* Liebm. op. cit. 32. 1851. *Mariscus manimae* Clarke, Contr. U. S. Nat. Herb. 10: 452. 1908. *M. manimae* var. *divergens* Clarke, loc. cit. 1908.

Guatemala; Costa Rica; at 750–1,400 m. Mexico; South America.

Plants slender, with short thick rhizomes, the culms 20–50 cm. high; leaves about 1 mm. wide; bracts leaflike; spikes very dense, usually crowded in a dense head, sometimes pedunculate, yellow-green; spikelets 3–7-flowered, the scales obtuse, finally spreading; achene ellipsoid, trigonous, blackish.

Mariscus guatemalensis Clarke (Kew Bull. Add. Ser. 8: 16. 1908, non *C. guatemalensis* Steud. 1855), described from Guatemala, is, according to Clarke, perhaps a synonym of this. It is said to have chestnut-red scales, and is probably the same as *C. Hartwegianus* Britton, which, apparently, is the plant called by Clarke (Contr. U. S. Nat. Herb. 10: 452. 1908) *Mariscus manimae* var. *Hartwegianus*.

16. *Cyperus panamensis* (Clarke) Britton ex Standl. Journ. Washington Acad. Sci. 15: 457. 1925. *Mariscus panamensis* Clarke, Kew Bull. Add. Ser. 8: 15. 1908.

Guatemala; Salvador; Panama; at 300 m. or less; type from Panama. Also in Colombia.

Plants perennial, the culms stout, 20–50 cm. high; leaves 3–5 mm. wide; bracts large and leaflike; spikes dense, short-cylindric, simply umbellate, the spikelets yellowish, 3–5-flowered, 1 cm. long or less, the scales obtuse; achene oblong, trigonous.

Called “coyolillo” in Salvador.

17. *Cyperus caracasanus* Kunth, Enum. Pl. 2: 86. 1837. *Mariscus flabelliformis* HBK. Nov. Gen. & Sp. 1: 215. 1815, non *C.*

flabelliformis Rottb. 1773. *C. breviradiatus* Liebm. Dansk. Vid. Selsk. Skrivt. V. 2: 26. 1851. *C. Hartii* Boeckl. Cyp. Nov. 1: 9. 1888.

Guatemala; Honduras; Salvador; Costa Rica; Panama; in moist or wet soil, at 2,400 m. or less. Mexico, West Indies, and South America; Africa and Asia.

Plants with short thick rhizomes, the culms 20-50 cm. high; leaves 1.5-3 mm. wide; bracts long and leaflike; spikes simply umbellate, dense, the spikelets greenish or yellowish, about 7 mm. long, 3-8-flowered, the scales obtuse, striate; achene linear-oblong.

The names applied to the plant in Central America are "coyolillo" in Salvador and "junco" in Panama. The name "mulinillo" is reported from Mexico.

18. *Cyperus incompletus* (Jacq.) Link, Hort. Berol. 1: 319. 1827. *Kyllinga incompleta* Jacq. Coll. Bot. 4: 101. 1790. *Mariscus Mutisii* HBK. Nov. Gen. & Sp. 1: 216. pl. 66. 1815. *C. Mutisii* Griseb. Fl. Brit. W. Ind. 567. 1864. *C. Ehrenbergianus* Boeckl. Linnaea 36: 391. 1869-70. *C. Randuzii* (*Tonduzii*) Boeckl. Allgem. Bot. Zeitschr. 2: 17. 1896. *M. Ehrenbergianus* Clarke, Contr. U. S. Nat. Herb. 10: 452. 1908.

Guatemala; Salvador; Nicaragua; Costa Rica; Panama; in moist or wet soil at 1,300 m. or less. Widely distributed in tropical America.

Plants perennial, with short rhizomes, the culms 30-100 cm. high; leaves 4-8 mm. wide; bracts long and leaflike; spikes in compound umbels, dense, cylindric, the spikelets 3-5 mm. long, 1-3-flowered, divaricate, green, the scales obtuse or acutish, closely appressed; achene oblong or ellipsoid, trigonous, yellow-brown.

Cyperus Randuzii was described from San José, Costa Rica. The name "jacintillo zacate" is reported for this species from Costa Rica, and "coquillo" from Mexico.

19. *Cyperus ligularis* L. Amoen. Acad. 5: 391. 1759. *Mariscus rufus* HBK. Nov. Gen. & Sp. 1: 216. pl. 67. 1815.

Guatemala; Honduras; Salvador; Costa Rica; Panama; in moist soil at or near sea level. Generally distributed in tropical America.

Plants coarse and stout, with very short or no rhizomes, often forming dense clumps, the culms as much as 1 m. high; leaves 5-10 mm. wide, thick, usually transverse-lineolate; bracts long and leaflike; spikes in compound umbels, short and very dense, the spikelets 5 mm. long or less, red-brown, the scales obtuse, striate, closely appressed; achene narrowly obovoid, triquetrous, castaneous.

Called "cortadera" in Panama and "tul coyolillo" in Guatemala.

20. *Cyperus Haenkei* Presl, Rel. Haenk. 1: 181. 1830. *C. Pittieri* Boeckl. Allgem. Bot. Zeitschr. 2: 19. 1896.

Costa Rica; at sea level. California and Mexico.

Plants perennial, the leaves narrow; spikes short, mostly sessile, the spikelets crowded, linear-oblong, brownish, 3 mm. long, the scales acutish, striate; rachilla winged; achene linear-oblong.

Cyperus Pittieri was described from Costa Rica.

21. *Cyperus globulosus* Aubl. Pl. Guian. 1: 47. 1775. *Mariscus echinatus* Ell. Bot. S. C. & Ga. 1: 75. 1816.

Panama; on rocks at sea level. United States, West Indies, and South America.

Plants slender, with short rhizomes, the culms 15–50 cm. long; leaves 2–4 mm. wide; bracts elongate and leaflike; spikes subglobose, simply umbellate or crowded in a small head, the spikelets 5–6 mm. long, crowded, greenish, 3–5-flowered; achene narrowly obovoid, trigonous, blackish.

22. *Cyperus cyperoides* (L.) Britton, Bull. Dept. Agr. Jamaica 5: Suppl. 1: 8. 1907. *Scirpus cyperoides* L. Mant. Pl. 181. 1771. *Mariscus Sieberianus* Nees, Linnaea 9: 286. 1834. *M. Sieberianus* var. *evolutior* Clarke in Hook. f. Fl. Brit. Ind. 6: 622. 1894.

Guatemala; Honduras; Salvador; Costa Rica; at about 900 m. West Indies; Old World.

Plants perennial, the rhizomes short or none, the culms 20–80 cm. high; leaves 3–6 mm. wide; bracts long and leaflike; spikes simply umbellate, sometimes sessile, very dense, the spikelets 1–3-flowered, green or yellowish, the scales obtuse; achene oblong, trigonous, blackish.

23. *Cyperus cayennensis* (Lam.) Britton, Bull. Dept. Agr. Jamaica 5: Suppl. 1: 8. 1907. *Kyllinga cayennensis* Lam. Ill. 1: 149. 1791. *Mariscus flavus* Vahl, Enum. Pl. 2: 374. 1806. *C. flavus* Nees, Linnaea 19: 698. 1847.

British Honduras; Guatemala; Salvador; Nicaragua; Panama; at 900 m. or less. Texas, Mexico, West Indies and South America; western Africa.

Plants with short rhizomes, the culms stout or slender, 20–70 cm. high; leaves 3–7 mm. wide; bracts long and leaflike; spikes simply umbellate, often sessile, cylindric, very dense, yellowish, the spikelets turgid, 1–2-flowered, the scales acutish, striate; achene oblong-obovoid, triquetrous, brownish.

24. *Cyperus hermaphroditus* (Jacq.) Standl. Contr. U. S. Nat. Herb. 18: 88. 1916. *Carex hermaphrodita* Jacq. Coll. Bot. 4: 174. 1790. *Mariscus Jacquini* HBK. Nov. Gen. & Sp. 1: 216. 1815. *C. thyrsiflorus* Jungh. Linnaea 6: 24. 1831. *C. Randuzii* var. *tenuis* Boeckl. Allgem. Bot. Zeitschr. 2: 17. 1896.

Guatemala; Salvador; Honduras; Nicaragua; Costa Rica; Panama; in moist soil at 1,350 m. or less. Mexico, West Indies, and South America.

Plants perennial, with short rhizomes, the culms mostly stout, 30–80 cm. high; leaves 4–8 mm. wide; bracts long and leaflike; spikes loose, usually simply umbellate, elongate, the spikelets green or yellow, divaricate, 5–9 mm. long, 2–4-flowered, the scales obtuse; achene narrowly ellipsoid, trigonous, brown.

Cyperus dissitiflorus Vahl, reported (as *Mariscus dissitiflorus* Clarke) from Costa Rica by Clarke, seems to be scarcely more than a form of this species.

25. *Cyperus Meyenianus* Kunth, Enum. Pl. 2: 88. 1837. *Mariscus Meyenianus* Nees in Mart. Fl. Bras. 2¹: 49. 1842.

Salvador. Ranging from Mexico and the West Indies to South America.

Plants with short rhizomes; culms 20–40 cm. high; leaves 6–7 mm. wide; umbels 10–12-rayed, the rays 3–7 cm. long, the spikes solitary or 2–3-umbellulate, 10–15 mm. thick, dense; spikelets 6–8 mm. long, 1 mm. wide, spreading at right angles, containing 3–4 nutlets; scales oblong-elliptic, obtuse; achene linear-oblong.

Known in Salvador by the name “coyolillo.”

26. *Cyperus prolixus* HBK. Nov. Gen. & Sp. 1: 206. 1815.

Guatemala; Costa Rica; Panama; in swamps, growing in water, at 1,300 m. or less. Mexico and South America.

Plants perennial, the culms very stout, 1–1.5 m. high or more; leaves long, 1–2 cm. wide; bracts large and leaflike; umbels large and much branched, the spikelets loosely spicate, about 1.5 cm. long, greenish or brownish, the scales lax, acute; achene linear-oblong, triquetrous, brownish.

27. *Cyperus articulatus* L. Sp. Pl. 44. 1753.

Guatemala; Honduras; Salvador; Nicaragua; Costa Rica; Panama (according to Kuntze); in wet soil, sometimes growing in water, at or near sea level. Generally distributed in tropical regions.

Plants perennial, stoloniferous, the culms terete, spongy, sometimes 2 m. long; leaves reduced to basal sheaths; spikelets loosely spicate, in large umbels, linear, 1–4 cm. long, 12–50-flowered, yellowish or brownish, the scales obtuse; rachilla winged; achene oblong, trigonous, black.

In Salvador, where it is called “sontul,” the plant is said to be employed as a remedy for toothache. The name “enea” is reported from Venezuela.

28. *Cyperus giganteus* Vahl, Enum. Pl. 2: 364. 1805.

British Honduras (according to Hemsley); Honduras; Salvador; Nicaragua (according to Hemsley); Panama; in swamps, near sea level. Mexico, Greater Antilles, and South America.

Plants large and stout, the culms 1–2 m. high; leaves reduced to basal sheaths; bracts long and leaflike, 1–2 cm. wide; umbels very

large, the spikes elongate, lax, the spikelets slender, 1 cm. long or less, 8-14-flowered, stramineous, the scales obtuse; rachilla winged; achene oblong-ellipsoid, trigonous, blackish.

The plant often forms extensive and dense colonies in open swamps near the coast, attracting attention because of its luxuriant growth. In general appearance it is very much like the papyrus of the Nile.

29. *Cyperus rotundus* L. Sp. Pl. 45. 1753.

British Honduras; Guatemala; Honduras; Panama; at or near sea level. Tropical and subtropical regions of both hemispheres.

A perennial, with rhizomes, these sometimes tuber-bearing, the culms slender, 10-60 cm. high, bulbous-thickened at the base; leaves 3-6 mm. wide; bracts usually short; spikes lax, the spikelets few, linear, 1-2 cm. long, 20-30-flowered, the scales obtuse, closely appressed; rachilla winged; achene ellipsoid, trigonous, black.

30. *Cyperus radiatus* Vahl, Enum. Pl. 2: 369. 1806.

Guatemala; Costa Rica. Warmer regions of both hemispheres.

Culms stout, 50-100 cm. long; leaves 6-9 mm. wide; bracts long and leaflike; spikes elongate, dense, the spikelets 12-30-flowered, yellowish or brownish, the scales obtuse; rachilla winged; achene ovoid or ellipsoid, trigonous, blackish.

31. *Cyperus spectabilis* Schreb. ex R. & S. Syst. Veg. 2: 208. 1817, nomen nudum; Link, Hort. Berol. 1: 318. 1827; Boeckl. Linnaea 35: 605. 1868.

Honduras; in moist fields at 1,400 m. Mexico.

Plants perennial, 30-60 cm. high, slender; leaves 2-4 mm. wide; bracts long and leaflike; spikes short and dense, almost headlike, the spikelets mostly 3-5-flowered, yellowish brown, the scales rounded, very obtuse, somewhat spreading; achenes oblong-obovate, 3-angled, obtuse, usually fuscous.

32. *Cyperus compressus* L. Sp. Pl. 46. 1753.

Guatemala; Honduras; Salvador; Nicaragua; Costa Rica; at or near sea level. Warmer regions of both hemispheres.

Plants annual, slender, the culms tufted, 10-40 cm. high; leaves 2-3 mm. wide, the sheaths reddish; spikelets few, in short spikes, or often digitate, 1-2.5 cm. long, 3-5 mm. wide, 4-40-flowered, green; rachilla not winged; achene obovoid, triquetrous, black.

33. *Cyperus distans* L. f. Suppl. Pl. 103. 1781.

Nicaragua (according to Hemsley). Warmer regions of both hemispheres.

Plants perennial, stoloniferous, the culms 40-100 cm. high; leaves 6-10 mm. wide; bracts long and leaflike; spikelets 2-3 cm. long, 10-20-flowered, reddish, the scales remote; rachilla very narrowly winged; achene oblong, trigonous, blackish.

34. *Cyperus esculentus* L. Sp. Pl. 45. 1753. *C. fulvescens* Liebm. Vid. Selsk. Skrivt. V. 2: 22. 1851.

Salvador; Nicaragua (according to Hemsley); Costa Rica; Panama; in sand along the coast. Mexico; temperate and tropical regions of both hemispheres.

Plants perennial, stoloniferous, the stolons ending in small tubers, the culms solitary, 20–60 cm. high; leaves 2–7 mm. wide; bracts leaflike; spikes lax, the spikes linear, 1–2 cm. long, yellowish; achene obovoid, trigonous.

This species is sometimes cultivated, under the name “chufa,” for the sweet edible tubers.

35. *Cyperus sphacelatus* Rottb. Descr. & Icon. 26. 1773.

Costa Rica; Panama; at or near sea level. Widely distributed in the warmer parts of America and in Africa.

Culms slender, tufted, 10–60 cm. high; leaves 3–5 mm. wide; bracts long and leaflike; spikelets few, loosely spicate, 1–2.5 cm. long, about 3 mm. wide, green or yellowish; achene obovoid, triquetrous, black.

36. *Cyperus tenerrimus* Presl, Rel. Haenk. 1: 166. 1830. *C. Schomburgkianus* Nees in Hook. Journ. Bot. 2: 393. 1840. *C. cymbaeformis* Liebm. Dansk. Vid. Selsk. Skrivt. V. 2: 20. 1851.

Guatemala; Honduras; Salvador; Nicaragua; Costa Rica; moist soil, at 1,400 m. or less. Mexico; northern South America.

Plants apparently perennial, with fibrous roots, the culms slender, 10–20 cm. high, bulbous-thickened at the base; leaves 1–2 mm. wide; bracts 4–8, very long and leaflike; spikelets crowded in a small dense head, nearly white, ovate, compressed, the scales curved, obtuse; achene oblong, trigonous, whitish.

One Guatemalan collection has been determined as *C. seslerioides* HBK., a Mexican species of which I have seen no Central American material. The name “pelillo” is applied to this species in Salvador.

37. *Cyperus humilis* Kunth, Enum. Pl. 2: 23. 1837. *C. humilis* var. *elatio*r Britton, Bull. Torrey Club 15: 99. 1888.

Guatemala; in wet soil at 350–1,350 m. Mexico; Martinique; Cuba.

Plants annual, the culms tufted, 5–14 cm. high; leaves 2–3 mm. wide; bracts leaflike; spikelets oblong, numerous, crowded in a dense head, 1 cm. long or less, about 40-flowered, pale green, strongly compressed, the scales acute, 3-nerved; achene narrowly obovoid, trigonous, black.

38. *Cyperus uncinatus* Poir. in Lam. Encycl. 7: 247. 1806. *C. cuspidatus* HBK. Nov. Gen. & Sp. 1: 247. 1815.

Guatemala; Salvador; Costa Rica; in moist soil, at 750–1,200 m. In the warmer regions of both hemispheres.

Culms very slender, tufted, 5-15 cm. high; leaves 1-2 mm. wide-bracts leaflike; umbels simple, the spikelets loosely clustered, 1 cm. long or less, 1.5 mm. wide, 15-50-flowered, the scales mucronate; acuminate, oblique; achene oblong-obovoid, trigonous, pale.

Some of the Central American specimens were determined by Clarke as *C. amabilis* Vahl, but they do not differ appreciably from others that he determined as *C. uncinatus*. Central American material referred to *C. glareosus* Liebm. appears to be referable to *C. uncinatus*.

39. *Cyperus canus* Presl, Rel. Haenk. 1: 179. 1830.

Guatemala; Salvador; Costa Rica. Mexico.

Plants stout, perennial, the culms about 1 m. high; leaves reduced to sheaths; bracts leaflike, about 1 cm. wide; umbels large, compound, the spikelets very numerous, linear-oblong, 1 cm. long, the scales brownish or reddish, acute, closely appressed; achenes minute, ellipsoid, trigonous, brownish.

In Salvador, where it is called "tule," "tul de petate," and "tul silvestre," this plant is of substantial economic importance, and it is sometimes cultivated in fields of considerable extent. The outer part of the culms is used in large amounts for making *petates* or mats, especially those employed on beds as mattresses. The inner soft portion of the culm is used for making less durable articles, such as fans for blowing up fires, bottle crates, etc.

The very similar *Cyperus alternifolius* L., or umbrella-plant, native of Madagascar, is cultivated commonly for ornament in Central American gardens. In Salvador it is known by the name "tule de jardín."

40. *Cyperus virens* Michx. Fl. Bor. Amer. 1: 28. 1803.

Guatemala (according to Hemsley); Costa Rica; in moist soil, at 900-2,100 m. United States, Mexico, West Indies, and South America.

Plants perennial, with short rhizomes, the culms stout, 1 m. high or less; leaves 6-9 mm. wide, thick; umbel compound, the spikelets very numerous, 12 mm. long or less, 3-4 mm. wide, greenish, the scales obtuse; achene ellipsoid, trigonous, pale brownish.

Known in Costa Rica by the name "junco."

41. *Cyperus Luzulae* (L.) Retz. Obs. Bot. 4: 11. 1786. *Scirpus Luzulae* L. Sp. Pl. ed. 2. 75. 1762. ?*C. guatemalensis* Gandoger. Bull. Soc. Bot. France 66: 297. 1920, non Steud. 1855.

British Honduras; Guatemala; Honduras; Nicaragua; Costa Rica; Panama; in moist or wet soil, at 900 m. or less. Widely distributed in tropical America.

Plants perennial, with short woody rhizomes, the culms 1 m. high or less, stout; leaves 3-7 mm. wide; bracts 6-10, long and leaflike; umbels chiefly simple, dense, the spikelets densely capitate, 3-4 mm. long, 2-3 mm. wide, brownish, 6-10-flowered, strongly compressed, the scales obtuse; achene oblong, trigonous, whitish.

Called "junco" in Panama, and "mulinillo" in Tabasco.

42. *Cyperus surinamensis* Rottb. Descr. 35. pl. 6, f. 5. 1773.

British Honduras; Guatemala; Honduras; Salvador; Nicaragua; Costa Rica; Panama; in swamps or wet soil, at 1,200 m. or less. Generally distributed in tropical America.

Plants perennial, the culms 20-60 cm. high; leaves 2-3 mm. wide; bracts long and leaflike; umbels simple or compound, the spikelets numerous, 4-11 mm. long, 2-3 mm. wide, 30-40-flowered, greenish or yellowish, the scales apiculate; achenes minute, ellipsoid, trigonous, brownish.

43. *Cyperus ochraceus* Vahl, Enum. Pl. 2: 325. 1805.

Guatemala; Honduras; in thickets or sandy places, near sea level. Widely distributed in tropical America.

Perennial, rather stout, 30-60 cm. high or more; leaves up to 6 mm. wide; bracts numerous, spreading, some of them much longer than the compound or simple umbel; umbel rays 15 cm. long or less, the spikelets numerous, capitate, compressed, obtuse, many-flowered, 5-12 mm. long, 2 mm. wide; scales yellow, subobtuse; stamen 1; achene ovoid, 3-angled, narrowed at each end.

44. *Cyperus simplex* HBK. Nov. Gen. & Sp. 1: 207. 1815.

Costa Rica; Panama; in forests or fields, at 300 m. or less. Mexico; northern South America.

Plants perennial, with rhizomes, the culms 2-15 cm. long, slender; leaves long, 3-7 mm. wide; bracts very long and leaflike; umbels simple, the rays mostly 10-20 cm. long; spikelets 1-3 at the end of each ray, 1-2 cm. long, 15-40-flowered, strongly compressed, pale, the scales glandular; achene obovoid, truncate, trigonous, whitish.

The name given to this plant in Panama is "junco."

45. *Cyperus haspan* L. Sp. Pl. 45. 1753. *C. foliatus* Boeckl. Allgem. Bot. Zeitschr. 1: 226. 1895.

Guatemala; Honduras; Costa Rica; in swamps or wet soil, at 1,500 m. or less. Warmer regions of both hemispheres.

Plants perennial, with rhizomes, the culms 10-70 cm. long; leaves mostly short and reduced to sheaths; bracts commonly 2 and shorter than the umbel, sometimes elongate; umbel usually compound, the spikelets numerous, 5-15 mm. long, 10-40-flowered, compressed, green or reddish, the scales obtuse; achene ovoid or obovoid, trigonous, whitish.

Called "junco" in Panama.

46. *Cyperus chorisanthus* Clarke, Contr. U. S. Nat. Herb. 10: 449. 1908.

Type from forests of Boruca, Costa Rica, at 460 m.

Plants perennial, with thick woody rhizomes, the culms about 60 cm. high; leaves elongate, 1 cm. wide or less; bracts 5–6, long and leaflike; umbel large, compound, the spikelets numerous, 8–13 mm. long, about 14-flowered, greenish; achene ellipsoid, trigonous, black.

47. *Cyperus diffusus* Vahl, Enum. Pl. 2: 321. 1806.

Guatemala; Honduras; Salvador; Nicaragua; Costa Rica; Panama; in moist or dry soil, usually in forest or thickets, at 1,200 m. or less. Warmer regions of both hemispheres.

Plants perennial, the culms 30–60 cm. long; leaves numerous, 4–12 mm. wide; bracts 4–10, long and leaflike; umbels usually compound, the spikelets few or numerous, 1–2 cm. long, 10–24-flowered, greenish, the scales mucronate; achene broadly ellipsoid, triquetrous, blackish.

This species was listed by Hemsley as *C. elegans* L. In Panama it is given the name “junquillo.”

48. *Cyperus elegans* L. Sp. Pl. 45. 1753. *C. viscosus* Sw. Prodr. Fl. Ind. Occ. 20. 1788.

British Honduras; Nicaragua; at or near sea level. Widely distributed in tropical America.

Plants perennial, viscid, the culms 20–70 cm. long; leaves 2–6 mm. wide; bracts long and leaflike; umbels simple or compound, the spikelets densely clustered, 9 mm. long or less, about 10-flowered, greenish, the scales acute; achene broadly obovoid, black.

49. *Cyperus nubigenus* Britt. & Standl. ex Standl. Journ. Washington Acad. Sci. 15: 472. 1925.

Costa Rica; type from Las Nubes, Province of San José, at 1,900 m., growing on stream banks.

A perennial about 1 m. high; leaves 1–2 cm. wide; bracts numerous, leaflike, equaling the rays, 7–15 mm. wide; primary rays numerous, 4–12 cm. long, the secondary rays very numerous, 1–5 cm. long; spikelets few or numerous, in dense glomerules at the ends of the secondary rays, lance-oblong, 1 cm. long, 3 mm. wide; scales 8–11, acute or acuminate, oblique and rather lax, dull-vinaceous, the keel green; achene 1 mm. long, trigonous, smooth, dull brownish.

DOUBTFUL SPECIES

CYPERUS LIEBMANNI Steud. Syn. Pl. Glum. 2: 7. 1855. *C. inconspicuus* Liebm. Dansk. Vid. Selsk. Skrivt. V. 2: 197. 1851.

Type from San José, Costa Rica.

Annual, the culms 5 cm. high; leaves longer than the culm; umbel 5–6-rayed, the outer rays 12–15 mm. long, with 6–9 spikes

at the tip; spikelets spicate, spreading, elongate-lanceolate, acute, 4 mm. long, compressed, 6-8-flowered; scales ovate, imbricate, compressed, obtuse, mucronate, rufescent, the keel green.

CYPERUS MACROLEPIS Boeckl. Allgem. Bot. Zeitschr. 1: 226. 1895.
Type from Costa Rica.

CYPERUS SERTULARINUS Liebm. Dansk. Vid. Selsk. Skrivt. V. 2: 213. 1851.

Type from Masaya, Nicaragua.

Plants with rhizomes, the culms 1 m. high or less; leaves shorter than the culms, 1 cm. wide; umbel decomposed, 10-rayed, the rays unequal, the spikes numerous, elongate, cylindric, dense; spikelets very numerous, divergent, easily deciduous, 12 mm. long, compressed, linear, acute, 7-8-flowered, the scales imbricate, oblong, very shortly mucronate, fuscous.

3. ELEOCHARIS R. Br.

Plants annual or perennial, the culms simple, terete or angulate; leaves reduced to sheaths; spikelet solitary, terminal, erect, few- to many-flowered, not involucrate, the scales spirally imbricate; perianth of 1-12 bristles, sometimes wanting; stamens 2-3; style 2-3-cleft; achene biconvex or 3-angulate, the style base persistent as a tubercle. —About 140 species, widely distributed.

The generic name is written as *Heleocharis* by some authors.

Scales firm, indurate, scarcely keeled or nerved.

Culms acutely 3-angulate above.

Achene not constricted, gradually prolonged into a cellular beak..... 1. *E. mutata*.

Achene constricted below the summit into a neck about half the width of the achene..... 2. *E. fistulosa*.

Culms terete.

Culms transversely septate..... 3. *E. interstincta*.

Culms not septate..... 4. *E. plicarhachis*.

Scales thin, keeled or nerved.

Style 2-cleft.

Sheaths scarious at the apex.

Spikelets green or brownish..... 5. *E. flaccida*.

Spikelets castaneous..... 6. *E. maculosa*.

Sheaths not scarious at the apex.

Plants perennial, with rhizomes..... 7. *E. nodulosa*.

Plants annual, with fibrous roots..... 8. *E. caribaea*.

Style 3-cleft.

Culms 3-8 mm. thick..... 9. *E. geniculata*.

Culms less than 2.5 mm. thick.

Achene cancellate or longitudinally costate.

Achene longitudinally costate.....10. *E. acicularis*.

Achene cancellate, not costate.....11. *E. retroflexa*.

Achene smooth or obscurely reticulate.

Plants annual.

Culms setaceous, not angulate.....12. *E. minima*.

Culms stout, 4-angulate.....13. *E. Durandii*.

Plants perennial, with rhizomes.

Achenes white or nearly so.....14. *E. sulcata*.

Achenes blackish.....15. *E. pachystyla*.

1. *Eleocharis mutata* (L.) R. & S. Syst. Veg. 2: 155. 1817.
Scirpus mutatus L. Pl. Jam. Pug. 6. 1759.

Guatemala; Costa Rica; Panama; in wet soil, ranging from sea level to 1,600 m. Widely distributed in tropical and subtropical America.

Plants with long stolons, the culms 30–70 cm. high, 3–6 mm. thick, not septate; spikelet 1.5–4 cm. long, 4–6 mm. thick, the scales obtuse, greenish; bristles longer than the achene; style 3-cleft; achene dark brown, faintly cancellate, the tubercle broader than the apex of the achene.

2. *Eleocharis fistulosa* (Poir.) Link in Spreng. Jahrb. 3: 78. 1820. *Scirpus fistulosus* Poir. Encycl. 6: 749. 1804.

Reported from Chepo, Panama (Svenson, Rhodora 31: 153. 1929). Widely distributed in tropical America and in Asia and Africa.

Culms sharply triangular, 40–60 cm. high; sheaths brown, membranous, rather loose, pointed at the summit; spikelets 1.5–3.5 cm. long, acute; scales straw-colored or gray, obtuse or somewhat acute, firm, striate; achene 2–2.4 mm. long, obovate, green or light brown, with deeply pitted, quadrangular cells; bristles usually exceeding the achene.

3. *Eleocharis interstincta* (Vahl) R. & S. Syst. Veg. 2: 149. 1817. *Scirpus interstinctus* Vahl, Enum. Pl. 2: 251. 1805.

British Honduras; Guatemala; Panama; in wet soil, ranging from sea level to 1,200 m. United States, Mexico (?), West Indies, and South America.

Plants stoloniferous, the culms 40–70 cm. high, about 5 mm. thick; spikelet 2–4 cm. long, 3–5 mm. thick, the scales very obtuse, greenish; bristles slightly longer than the achene; style usually 3-cleft; achene pale, faintly striate, the tubercle conic, black.

4. **Eleocharis plicarhachis** (Griseb.) Svenson, *Rhodora* 31: 158. 1929. *Scirpus plicarhachis* Griseb. Cat. Pl. Cub. 239. 1866. *E. variegata* var. *laxiflora* Clarke, Contr. U. S. Nat. Herb. 10: 455. 1908, non *Scirpus laxiflorus* Thwaites.

Costa Rica (Buenos Aires, at 200 m.). Tropical America.

Plants stoloniferous, the culms 20–40 cm. high, 2–3 mm. thick; spikelet 2–2.5 cm. long, about 3 mm. thick, the scales greenish; bristles about twice as long as the achene; style 3-cleft; achene minutely reticulate, faintly striate, the tubercle ovoid-pyramidal.

5. **Eleocharis flaccida** (Reichenb.) Urban, *Symb. Antill.* 2: 165. 1900. *Scirpus flaccidus* Reichenb. ex Spreng. Tent. Suppl. 3. 1828. *E. ochreate* Steud. Syn. Pl. Cyp. 79. 1855. *E. albobaginala* Boeckl. Vid. Medd. Kjobenhavn 1869: 133. 1870. *E. Tuerckheimii* Boeckl. Cyp. Nov. 1: 16. 1888. *E. Pittieri* Boeckl. Allgem. Bot. Zeitschr. 2: 35. 1896.

Guatemala; Honduras; Nicaragua; Costa Rica; in wet soil, at about 1,300–1,400 m. United States, West Indies, and South America; Old World tropics.

Rhizome very short or none; culms 5–30 cm. long, about 1 mm. thick, angulate; spikelet 3–6 mm. long, the scales obtuse, greenish; bristles equaling the achene, the latter obovate, smooth, brown, the tubercle small, conic.

Eleocharis Tuerckheimii was described from Cobán, Guatemala; *E. Pittieri* from San José, Costa Rica. A collection of *E. flaccida* was reported from Costa Rica by Clarke as *E. olivacea* Torr.

6. **Eleocharis maculosa** (Vahl) R. Br. Prodr. Nov. Holl. 224. 1810. *Scirpus maculosus* Vahl, Enum. Pl. 2: 247. 1806.

Guatemala (Alta Verapaz, at 1,350 meters, in wet soil). Southern United States, West Indies, and South America.

Plants with slender dark stolons, the culms 10–35 cm. high, the sheaths thin and scarious above; spikelet ovoid, 5–12 mm. long, 3–4 mm. thick, the scales with scarious margins; bristles 7–8, equaling the achene, retrorsely scabrous, brown; achene obovoid, plano-convex, castaneous, the tubercle narrow, pale.

7. **Eleocharis nodulosa** (Roth) Schult. in R. & S. Syst. Veg. Mant. 2: 87. 1824. *Scirpus nodulosus* Roth, Nov. Pl. Ind. Or. 29. 1821.

Guatemala; Honduras; Salvador; Nicaragua; Costa Rica; Panama; in wet soil, ranging from sea level to 1,400 m. Widely distributed in tropical America.

Plants with rhizomes, the culms 20–70 cm. long, rather stout, 2–2.5 mm. thick; spikelet 1–2.5 cm. long, fuscous or purplish; bristles equaling the achene, the latter ovoid, greenish brown, smooth, the tubercle small, compressed-pyramidal.

Called “junco” in Costa Rica.

8. *Eleocharis caribaea* (Rottb.) Blake, *Rhodora* 20: 24. 1918. *Scirpus caribaeus* Rottb. Descr. 24. 1772.

British Honduras; Guatemala; Honduras; Salvador; Nicaragua; Costa Rica; Panama; in wet soil, at 1,800 m. or less. Generally distributed in tropical America, and in the Old World.

Culms slender, 5-30 cm. high, tufted, stiff; spikelet ovoid, obtuse, 3-5 mm. long, the scales obtuse, pale or dark brown, scarious-margined; bristles equaling the achene, the latter obovate, black, smooth and shining, the tubercle minute, depressed.

This plant usually has been called *E. capitata* (L.) R. Br., a name belonging properly to a species of the United States (*E. tenuis* Schult.).

9. *Eleocharis geniculata* (L.) R. & S. Syst. Veg. 2: 150. 1817. *Scirpus geniculatus* L. Sp. Pl. 48. 1753.

Guatemala; Honduras; Salvador; Costa Rica; Panama; in wet soil, often in marshes or along stream banks, ranging from sea level to 1,800 m. Generally distributed in tropical America.

Plants with rhizomes, the culms 30-100 cm. high, transversely septate, terete; spikelet 1-3 cm. long, 5-9 mm. thick, brown, the scales acutish; bristles equaling or longer than the achene, this ellipsoid, trigonous, smooth or granular, yellow-brown, the tubercle conic.

In Costa Rica, where it is called "junco," this plant is used extensively for making thick mats that are used as mattresses on beds. In the mountains of that country there are often large meadows overgrown almost exclusively with the plant. In Salvador this same species is called "tul," "tule," "sintule," and "zuntule."

10. *Eleocharis acicularis* (L.) R. Br. Prodr. Fl. Nov. Holl. 224. 1810. *Scirpus acicularis* L. Sp. Pl. 48. 1753.

Costa Rica (Volcán Poás and Cerro de Las Vueltas, at 2,500-3,000 m.); reported, perhaps incorrectly, from Salvador by Hemsley. Widely distributed in both hemispheres.

Plants with filiform rhizomes, the culms capillary, 3-15 cm. long; spikelet 3-6 mm. long, usually 4-6-flowered, brown or castaneous, the scales obtuse; bristles 3-4 or none; achene obovoid-oblong, longitudinally 12-15-striate, pale, the tubercle minute, acute.

11. *Eleocharis retroflexa* (Poir.) Urban, Symb. Antill. 2: 165. 1900. *Scirpus retroflexus* Poir. in Lam. Encycl. 6: 753. 1804. *E. chaetaria* R. & S. Syst. Veg. 2: 154. 1817.

British Honduras; Guatemala; Honduras; Salvador; Nicaragua; Costa Rica; Panama; in moist soil, usually in meadows, fields, or pastures, ranging from sea level to 2,500 m. Widely distributed in the tropics of both hemispheres.

Rhizomes filiform or none; culms capillary, 2-20 cm. long; spikelet 3-4 mm. long, containing 1-4 achenes, green, sometimes spotted with purple, the scales acutish; bristles equaling the achene, this obovoid, triquetrous, white, coarsely cancellate, the tubercle pyramidal.

In wet meadows this plant often forms extensive pure colonies, consisting of thousands of the delicate, bright green culms closely matted together.

12. *Eleocharis minima* Kunth, Enum. Pl. 2: 139. 1837.

Honduras (in bog at 1,500 m.); Costa Rica (Cañas Gordas, at 1,100 m.). Widely dispersed in tropical America.

Culms cespitose, very slender, 1-20 cm. long; spikelet 2-4 mm. long, 8-10-flowered, the scales brown or purplish, acutish; bristles shorter than the achene, this obovoid, smooth, white, 3-angulate, the tubercle depressed-globose.

13. *Eleocharis Durandii* Boeckl. Allgem. Bot. Zeitschr. 2: 34. 1896.

Costa Rica (type from Buenos Aires); Panama.

Culms tufted, 5-30 cm. high; spikelet 4-7 mm. long, obtuse, the scales greenish; bristles equaling the achene, this whitish, smooth, 3-angulate, the tubercle short, pyramidal.

14. *Eleocharis sulcata* (Roth) Nees, Linnaea 9: 294. 1834. *Scirpus sulcatus* Roth, Nov. Pl. Ind. Or. 30. 1821. *Limnochloa calyptrata* Liebm. Dansk. Vid. Selsk. Skrivt. 2: 56. 1849. *E. calyptrata* Steud. Syn. Pl. Glum. 2: 81. 1855. *E. Rothiana* Boeckl. Flora 43: 3. 1860. *E. costaricensis* Boeckl. Allgem. Bot. Zeitschr. 2: 34. 1896. *E. purpureo-vaginata* Boeckl. Allgem. Bot. Zeitschr. 2: 34. 1896.

Guatemala; Honduras; Salvador; Nicaragua; Costa Rica; Panama; wet soil, ascending to 1,800 m. Mexico; South America.

Rhizomes short, the culms tufted, 10-30 cm. high; spikelet 4-7 mm. long, many-flowered, obtuse, fuscous or purplish, the scales obtuse; bristles shorter than the achene, this trigonous, obovoid, smooth, the tubercle short and broad.

One specimen from Guatemala, which probably belongs here, was determined by Clarke as *E. montana* (HBK.) R. & S. The plants are too immature for certain identification. *Eleocharis calyptrata* was described from Segovia, Nicaragua; *E. costaricensis* from Boruca, Costa Rica; and *E. purpureo-vaginata* from Buenos Aires, Costa Rica.

15. *Eleocharis pachystyla* (C. Wright) Clarke in Urban, Symb. Antill. 2: 72. 1900. *Scirpus pachystylus* C. Wright in Sauvalle, Fl. Cub. 174. 1871.

Costa Rica (Cañas Gordas, in swamp at 1,100 m.). Cuba and northern South America.

Rhizomes stout, the culms 40–70 cm. long, stout; spikelet 6–7 mm. long, obovoid, very obtuse, brownish, the scales obtuse; bristles longer than the achene, this obovoid, trigonous, the tubercle pyramidal.

4. STENOPHYLLUS Raf.

Annuals or perennials with slender culms, leafy below; leaves narrowly linear or filiform; spikelets solitary, umbellate, or capitate, subtended by an involucre of 1 to several bracts; scales spirally imbricate; flowers perfect; perianth none; stamens 2–3; style 2–3-cleft, the base swollen and persistent as a tubercle upon the achene; achene 3-angled or lenticular.—About 90 species, in temperate and tropical regions of both hemispheres.

Spikelets present in the axils of the leaves.....5. *S. Funckii*.
Spikelets terminal only.

Spikelet 1.....1. *S. paradoxus*.

Spikelets few or many.

Spikelets sessile in umbellate fascicles.....2. *S. junciformis*.

Spikelets pedicellate, solitary on the rays of the umbel.

Culms glabrous above.....3. *S. tenuifolius*.

Culms pubescent.....4. *S. hirtellus*.

1. *Stenophyllus paradoxus* (Spreng.) Standl. Contr. U. S. Nat. Herb. 18: 88. 1916. *Schoenus paradoxus* Spreng. Syst. Veg. 1: 190. 1825. *Bulbostylis paradoxa* Kunth, Enum. Pl. 206. 1837. *Rynchospora perrigida* Boeckl. Allgem. Bot. Zeitschr. 2: 93. 1896.

Costa Rica; Panama; on plains, altitude about 250 m. South America; type from Caracas, Venezuela.

Plants perennial, forming very dense, globose or columnar clumps; culms stiff, 5–16 cm. long, glabrous; leaves filiform, stiff, shorter than the culms; spikelet about 1 cm. long, hairy; style 3-cleft; achene obovoid, pale brown.

2. *Stenophyllus junciformis* (HBK.) Britton, Bull. Torrey Club 43: 442. 1916. *Isolepis junciformis* HBK. Nov. Gen. & Sp. 1: 222. 1815. *Bulbostylis junciformis* Kunth, Enum. Pl. 2: 211. 1837.

Salvador; Costa Rica; Panama; in dry soil, ascending to 1,000 m.

Culms tufted, 10–80 cm. long, glabrous; leaves setaceous, shorter than the culms; bracts mostly shorter than the umbels; spikelets 4–8 mm. long, dark brown; style 3-cleft; achene obovoid, brown, smooth or reticulate.

3. *Stenophyllus tenuifolius* (Rudge) Britton, Bull. Torrey Club 43: 448. 1916. *Scirpus tenuifolius* Rudge, Pl. Guian. 18. pl. 22. 1805.

Guatemala; Salvador; Costa Rica; at altitudes of 2,300 m. or less. Also in South America.

Plants annual, tufted, 10–40 cm. high; leaves setaceous, shorter than the culms, glabrous or nearly so; bracts longer or shorter than the umbels; spikelets about 5 mm. long, 6–15-flowered, dark brown; style 3-cleft; achene obovoid, pale or brown, transversely undulate.

The Central American material has been referred to *S. capillaris* (L.) Britton (*Fimbristylis capillaris* Gray; *Bulbostylis capillaris* Clarke), but, according to Britton, no true *S. capillaris* is found in Central America.

4. ***Stenophyllus hirtellus*** (Schrad.) Standl. Journ. Washington Acad. Sci. 15: 457. 1925. *Isolepis hirtella* Schrad. in Schult. Mant. 2: 70. 1824. *Bulbostylis Langsdorffiana* Kunth, Enum. Pl. 2: 214. 1837. *B. hirtella* Nees in Mart. Fl. Bras. 2¹: 85. 1843. *Fimbristylis ciliaris* var. *pilosa* Britton, Bull. Torrey Club 15: 102. 1888.

Guatemala, at 1,500 m. Mexico and South America.

Plants perennial, tufted, 10–30 cm. high; leaves setaceous, erect, half as long as the culms, pubescent; spikelets few, 4–7 mm. long, castaneous; style 3-cleft; achene obovoid, yellow-brown, smooth or faintly reticulate.

5. ***Stenophyllus Funckii*** (Steud.) Britton, Bull. Torrey Club 21: 30. 1894. *Isolepis Funckii* Steud. Syn. Pl. Glum. 2: 91. 1855.

Salvador. Ranging from southwestern United States to Bolivia.

An annual with filiform culms and leaves, 3–8 cm. high; spikelets 4–8 mm. long, solitary at the apex of the culm and sessile at the base of the leaves, the basal spikes few-flowered, sometimes reduced to a single flower; scales of the terminal spike lanceolate, acuminate, castaneous, the lowest often elongate and bractlike; bristles none; achene obovoid, trigonous, with short beak, white, obscurely rugulose.

5. FIMBRISTYLIS Vahl

Plants annual or perennial, the culms leafy below; spikelets usually capitate or umbellate, sometimes solitary, terete, involucrate, the scales usually spirally imbricate, all fertile; perianth none; stamens 1–3; style 2–3-cleft, deciduous; achene lenticular, biconvex, or 3-angulate.—About 125 species, of wide distribution.

Style branches 3.

Culms bearing each a single spikelet.

Scales somewhat 2-ranked, indurate. 1. *F. monostachya*.

Scales spirally imbricate, thin. 2. *F. Preslii*.

Culms bearing numerous spikelets.

Spikelets 2–4 mm. long, very obtuse. 3. *F. miliacea*.

Spikelets about 6 mm. long, acute. 4. *F. complanata*.

Style branches 2.

Achene longitudinally striate; plants usually annual 5. *F. diphylla*.

Achene smooth or reticulate, not striate; plants perennial.

Scales puberulent near the apex..... 6. *F. ferruginea*.

Scales glabrous.

Leaves much shorter than the culms; inflorescence dense and congested..... 7. *F. spathacea*.

Leaves nearly or fully as long as the culms; inflorescence open.

Scales coriaceous, lustrous..... 8. *F. spadicea*.

Scales thinner, dull..... 9. *F. castanea*.

1. *Fimbristylis monostachya* (L.) Hassk. Pl. Jav. Rar. 61. 1848. *Cyperus monostachyus* L. Mant. Pl. 2: 180. 1771. *Abilgardia monostachya* Vahl, Enum. Pl. 2: 296. 1806.

Guatemala; Costa Rica; Panama; at 250–1,400 m. Mexico, West Indies, and South America; Old World tropics.

Plants glabrous or nearly so, densely caespitose, the culms 5–40 cm. high; leaves setaceous, equaling or shorter than the culms; bract usually shorter than the spikelet, the latter pale, 12–15 mm. long; achene stramineous or brownish, somewhat tuberculate.

2. *Fimbristylis Preslii* Kunth, Enum. Pl. 2: 228. 1837. *Abilgardia pubescens* Presl, Rel. Haenk. 1: 180. 1830, non *F. pubescens* Link, 1820.

Guatemala (according to Clarke); Costa Rica (Nicoya). Colombia.

Culms very slender, scabrous; leaves setaceous, pubescent; spikelets 4–5 mm. long, the scales obtuse, brownish; achene abruptly narrowed below, yellowish brown, obovoid-pyriform.

3. *Fimbristylis miliacea* (L.) Vahl, Enum. Pl. 2: 287. 1805. *Scirpus miliaceus* L. Syst. Nat. ed. 10. 868. 1759. *Trichelostylis miliacea* var. *microstachya* Nees in Seem. Bot. Voy. Herald 222. 1854.

Guatemala; Honduras; Salvador; Nicaragua (according to Hemsley); Costa Rica; Panama; in wet, often sandy soil, at 460 m. or less. Tropical regions of both hemispheres.

Plants annual, slender, glabrous, 20–60 cm. high; leaves usually shorter than the culms, 1–2 mm. wide; spikelets numerous, subglobose, very obtuse, brown; achenes transversely lineate, stramineous or pale brown.

4. *Fimbristylis complanata* (Retz.) Link, Hort. Berol. 1: 292. 1827. *Scirpus complanatus* Retz. Obs. Bot. 5: 14. 1789.

Panama; in dry fields or savannas. Widely distributed in the tropics of both hemispheres.

Plants glabrous, with very short or no rhizomes, the culms slender, 20–80 cm. high; leaves shorter than the culms, 1.5–3 mm. wide; spikelets few or numerous, solitary, brown; achene trigonous, transversely lineate, yellow-brown.

5. *Fimbristylis diphylla* (Retz.) Vahl, Enum. Pl. 2: 289. 1806. *Scirpus diphyllus* Retz. Obs. Bot. 5: 15. 1789. *F. pentastachya* Boeckl. Flora 40: 36. 1857. *F. polymorpha* Boeckl. Vid. Medd. Kjobenhavn 1869: 141. 1870. *F. Holwayana* Fernald, Proc. Amer. Acad. 36: 492. 1901.

British Honduras; Guatemala; Honduras; Salvador; Costa Rica; Panama; in swamps or moist soil, often growing in sand or gravel, sometimes a weed in cultivated or waste ground, ranging from sea level to 1,800 m. Generally distributed in tropical America; also in the Old World tropics.

Plants glabrous or pubescent, the culms 10–60 cm. high; leaves shorter than the culms; umbels loose and open, the spikelets numerous, 5–10 mm. long, solitary, obtuse, brown or castaneous; achenes obovoid, biconvex, white or stramineous, 5–11-costate on each surface.

Occasionally forms of this species are found in which the inflorescence is reduced to a single spikelet. Some authors use for this plant the name *Fimbristylis annua* (All.) R. & S., but, according to Britton, that name should be restricted to an Old World plant. *F. diphylla* is one of the most common and abundant of the sedges of Central America, occurring nearly everywhere at lower elevations.

6. *Fimbristylis ferruginea* (L.) Vahl, Enum. Pl. 2: 291. 1806. *Scirpus ferrugineus* L. Sp. Pl. 50. 1753. *F. sublateralis* Steud. Syn. Pl. Glum. 2: 114. 1855.

Panama (on the Atlantic coast). West Indies and South America; Old World.

Plants glabrous or nearly so, the culms 20–80 cm. high, the rhizomes very short; leaves very short, the blades often nearly obsolete; spikelets 5–20, about 1 cm. long, ovoid, the scales brown or ferruginous; achene obovoid, biconvex, smooth, brownish.

7. *Fimbristylis spathacea* Roth, Nov. Pl. 24. 1821. *Scirpus glomeratus* Retz. Obs. Bot. 4: 11. 1786. *F. glomerata* Urban, Symb. Antill. 2: 166. 1900, non Nees, 1834. *F. melanospora* Fernald, Proc. Amer. Acad. 36: 491. 1901.

British Honduras; Honduras; Panama; on or near beaches along Atlantic coast. Widely distributed in the tropics of both hemispheres.

Plants glabrous or nearly so, with short thick rhizomes, the culms stout, 10–40 cm. high; leaves narrow, stiff; spikelets numerous, crowded, 3–6 mm. long, obtuse, brownish; achene obovoid, minute, usually almost black, biconvex, granulate.

8. *Fimbristylis spadicea* (L.) Vahl, Enum. Pl. 2: 294. 1806. *Scirpus spadiceus* L. Sp. Pl. 51. 1753.

Guatemala; Honduras; Salvador; Costa Rica; Panama; usually on sea beaches or tidal flats, in Guatemala on lake shores at an elevation of 1,100 m. West Indies and South America.

Plants glabrous, with short rhizomes, the culms 20–70 cm. high; leaves narrow, stiff, the bases indurate and castaneous; spikelets few or numerous, 1–1.5 cm. long, the scales obtuse, castaneous; achene biconvex, orbicular, somewhat reticulate, dark brown.

Called “tul fino” and “espárrago” in Guatemala.

9. *Fimbristylis castanea* (Michx.) Vahl, Enum. Pl. 2: 292. 1806. *Scirpus castaneus* Michx. Fl. Bor. Amer. 1: 31. 1803.

Costa Rica (Salinas Bay). United States and Mexico.

Plants glabrous or nearly so, the culms slender, 20–70 cm. high; leaves almost setaceous; spikelets few, ellipsoid, obtuse, brown; achene obovoid, smooth, delicately reticulate, brownish.

6. SCIRPUS L.

Annuals or perennials, the culms leafy below, the leaves often reduced to sheaths; flowers perfect, the spikelets terete or slightly compressed, the scales spirally imbricate; perianth of 1–6 bristles; stamens 2–3; style 2–3-cleft, deciduous; achene triangular or lenticular.---About 150 species, widely distributed.

Spikelets numerous, umbellate-paniculate or in umbellate heads.

Spikelets in umbellate heads; leaves well developed. 1. *S. cubensis*.

Spikelets loosely umbellate-paniculate; leaves reduced to sheaths.

2. *S. californicus*.

Spikelets few, capitate, appearing lateral.

Culms triangular, 2–7 mm. thick. 3. *S. Olneyi*.

Culms terete, 1 mm. thick or less. 4. *S. inundatus*.

1. *Scirpus cubensis* Kunth, Enum. Pl. 2: 172. 1837.

Guatemala (Dueñas, according to Hemsley); Honduras; Nicaragua; Panama; along the Atlantic coast, at or near sea level, usually growing in shallow water. Widely distributed in tropical America.

Plants stout, perennial, glabrous, with long stolons, the culms erect or decumbent, 30–70 cm. long; leaves basal, 5–9 mm. wide, usually equaling the culms; umbels simple, the bracts long and leaf-like, the heads globose, 1–1.5 cm. in diameter, composed of very numerous spikelets, these 4–8 mm. long; scales ovate, acute, brown; bristles none; style bifid; achene narrowly obovoid, smooth, pale.

2. *Scirpus californicus* (C. A. Mey.) Britton, Trans. N. Y. Acad. Sci. 11: 6. 1892. *Elytrospermum californicum* C. A. Mey. Mém. Acad. Pétersb. V. 1: 200. pl. 2. 1830. *S. riparius* Presl, Rel. Haenk.

1: 193. 1830, non Spreng. *S. tatora* Kunth, Enum. Pl. 2: 166. 1837.

Guatemala; in wet soil or shallow water, at altitudes of 1,200–2,400 m. United States, Mexico, and South America.

Plants stout, often 1 m. high or more, the culms terete; leaves reduced to sheaths; involucre of a single short stout erect bract, appearing like a continuation of the culm; spikelets very numerous, brown, 5–12 mm. long; bristles barbellate; achene fuscous.

3. *Scirpus Olneyi* Gray, Bost. Journ. Nat. Hist. 5: 238. 1845.

Guatemala (shore of Laguna de Amatitlán, at 1,180 m.). United States, Mexico, and West Indies.

Plants perennial, the culms 0.5–2 m. high; leaf blades 2–12 cm. long, or the sheaths often bladeless; involucre of a single short erect bract; spikelets 3–12, 5–10 mm. long, dark brown; bristles 6, downwardly barbate; achene plano-convex, brown.

4. *Scirpus inundatus* (R. Br.) Poir. Encycl. Suppl. 5: 103. 1817. *Isolepis inundata* R. Br. Prodr. Fl. Nov. Holl. 1: 222. 1810.

Costa Rica, at 2,000–2,800 m. South America, Australia, and New Zealand.

Plants caespitose, the culms slender, 2–20 cm. high; leaves narrowly linear, shorter than the culms; bract one, much exceeding the spikelets; spikelets 2–14, 4–8 mm. long, castaneous; bristles none; achene yellowish brown.

Some or all of the spikelets usually are replaced by small plants that fall off and take root. The plant grows in Costa Rica in meadows or pastures or on open banks high in the mountains. Occasionally it is found in sphagnum bogs, and it is particularly plentiful in the acid volcanic sand and gravel about the crater of Poás Volcano. The plants frequently form dense tufts or cushions.

7. *Fuirena* Rottb.

Plants perennial, with leafy triangular culms; spikelets many-flowered, terete, in terminal and axillary clusters, the scales spirally imbricate, awned, the lowest ones usually empty; flowers perfect; perianth of 3 ovate stipitate scales, these usually alternating with barbate bristles; stamens 3; style 3-cleft, deciduous; achenes 3-angulate, smooth, stipitate or sessile.—About 30 species, in the warmer regions of both hemispheres.

Clusters of spikelets few, usually 4–5; leaves short, less than 5 mm. wide, sparsely or densely pilose.....1. *F. incompleta*.

Clusters of spikelets numerous; leaves elongate, 8 mm. wide or more, glabrous or scabrous.

Inner scales of the perianth obovate, scarcely stipitate, scarcely thickened at the apex.....2. *F. umbellata*.

Inner scales of the perianth ovate-lanceolate or oval, conspicuously stipitate, much thickened at the apex.

Leaves glabrous or scabrous, 1–2 cm. wide 3. *F. robusta*.

Leaves pilose, 5–8 mm. wide 4. *F. bulbipes*.

1. **Fuirena incompleta** Nees in Mart. Fl. Bras. 2: 107. 1843.
Guatemala; Panama; in wet soil, at altitudes of 1,000–1,300 m. South America.

Culms rather slender, about 60 cm. long; leaves stiff, 12 cm. long or less; spikelets 8–10 mm. long, the scales pubescent, aristate.

2. **Fuirena umbellata** Rottb. Descr. & Icon. 70. pl. 19, f. 3. 1773.

British Honduras; Guatemala; Honduras; Salvador; Costa Rica; Panama; in wet soil near sea level. Found in tropical regions of both hemispheres.

Plants with creeping rhizomes; culms 0.5–1.5 m. long, stout, sometimes pilose above; leaves 25 cm. long or less, 8–15 mm. wide, usually scabrous; spikelets 1 cm. long, the scales pubescent, aristate; achene pale brown.

3. **Fuirena robusta** Kunth, Enum. Pl. 2: 185. 1837.

Panama (Chagres). Cuba; South America.

Culms stout, glabrous or nearly so; leaves elongate, 1–2 cm. wide, scabrous; spikelets very numerous, 1–1.5 cm. long, the scales pubescent.

The species was collected in Panama in 1850 by Fendler, but it has not been found there by more recent collectors.

4. **Fuirena bulbipes** Blake, Contr. U. S. Nat. Herb. 24: 2. 1922.

Type from Cristina, Department of Izabal, Guatemala, near the Atlantic coast.

Culms bulbous-thickened at the base, 60–70 cm. long, hispid-pilose below; leaves 4–14 cm. long; spikelets numerous, 5–6 mm. long, acutish, the scales mucronate; inner scales 3-nerved, obovate-oval, with a slender incurved awn at the apex; achene broadly obovoid, trigonous, pale brown, lustrous.

8. ASCOLEPIS Nees

A genus of 6 species, in South America and Africa.

1. **Ascolepis brasiliensis** (Kunth) Benth. ex Clarke in Durand & Schinz, Consp. Fl. Afr. 5: 651. 1895. *Platylepis brasiliensis* Kunth, Enum. Pl. 2: 269. 1837.

Panama, in wet meadows at about 1,250 m. South America and Africa.

Plants perennial, tufted, glabrous, the culms 20-50 cm. high, slender; leaves basal, stiff, much shorter than the culms, erect, about 1 mm. wide; spikelets 1-3, sessile, terete, subtended by 2 long linear bracts, ovoid, obtuse, 6-12 mm. long; scales narrowly lanceolate, the inner ones hyaline, connate, obcompressed, forming an ovate-rounded, abruptly short-acuminate utricle; style bifid; achene oblong, compressed.

9. LIPOCARPHA R. Br.

1. *Lipocarpa maculata* (Michx.) Torr. Ann. Lyc. N. Y. 3: 288. 1836. *Kyllinga maculata* Michx. Fl. Bor. Amer. 1: 29. 1803. *Hypaelyptum sphacelatum* Vahl, Enum. Pl. 2: 283. 1806. *L. sphacelata* Kunth, Enum. Pl. 2: 267. 1837.

Guatemala; Honduras; Salvador; Panama; in wet soil, often in sand, ranging from sea level to 1,400 m. Widely distributed in the tropics of both hemispheres.

Plants annual, the culms very slender, tufted, sulcate; leaves basal, 1 mm. wide or less, usually much shorter than the culms; bracts usually 2, 1-12 cm. long; spikelets in 2 terminal heads, broadly ovoid, very obtuse, terete, 4-6 mm. long; scales spirally imbricate, spatulate, usually brownish; bristles none.

10. HEMICARPHA Nees & Arn.

A genus of about 5 species, in both hemispheres.

1. *Hemicarpha micrantha* (Vahl) Pax in Engl. & Prantl, Pflanzenfam. 2: 105. 1887. *Scirpus micranthus* Vahl, Enum. Pl. 2: 254. 1806. *H. subsquarrosa* Nees in Mart. Fl. Bras. 2: 61. 1842.

Guatemala; Honduras; Salvador; Costa Rica; in moist soil, often in sand, ranging from sea level to 900 m. United States and Mexico; South America; Angola.

A slender tufted glabrous annual, 5-12 cm. high; leaves setaceous, mostly shorter than the culms; flowers perfect, the spikelets ovoid, many-flowered, in clusters of 2-4 or solitary, about 2 mm. long; bracts much longer than the spikelets; scales brown, spirally imbricate; perianth none; stamen 1; style 2-cleft; achene obovate, slightly compressed, pale brown.

11. MARISCUS (Hall.) Zinn.

A genus of about 40 species, widely distributed in tropical and temperate regions.

1. *Mariscus jamaicensis* (Crantz) Britton in Britt. & Brown, Illustr. Fl. 1: 348. 1913. *Schoenus Mariscus* L. Sp. Pl. 42. 1753. *Cladium jamaicense* Crantz, Inst. 1: 362. 1766. *C. Mariscus* R. Br. Prodr. Fl. Nov. Holl. 236. 1810. *Hypolytrum Kuntzeanum* Boeckl. Cyp. Nov. 1: 23. 1888.

British Honduras; Guatemala; Panama (according to Hemsley); ranging from sea level to an altitude of 1,400 m. Widely distributed in both hemispheres.

A coarse perennial 1-2.5 m. high, the culms obtusely triangular, leafy; leaves much elongate, 6-20 mm. wide, the margins finely serrulate; spikelets few-flowered, in large panicles, clustered, ovoid, 4-5 mm. long, the uppermost flower perfect; perianth none; stamens 2; achene ovoid, sharp-pointed, 2 mm. long, rugose.

Known in the southern United States by the name "sawgrass." The sharp sawlike edges of the coarse leaves cut the skin painfully if the plant is handled carelessly. In Florida the leaves are employed for weaving baskets and other articles.

12. REMIREA Aubl.

The genus consists of a single species.

1. *Remirea maritima* Aubl. Pl. Guian. 1: 45. pl. 16. 1775.

Honduras; Nicaragua (according to Hemsley); Panama (Chagres); in sand on seashores. Tropical regions of both hemispheres.

A glabrous perennial with long slender rhizomes; culms 5-25 cm. long, densely leafy; leaves erect or spreading, stiff, 8 cm. long or less; bracts 2-6, 6 cm. long or less, similar to the leaves; spikelets densely spicate, 1-flowered, the spikes ovoid, 1-2 cm. long, stramineous or fuscous; scales 4; bristles none; stamens 3; style usually 3-cleft; achene sessile, smooth.

The plant often forms dense tufts that are well protected by the very numerous, stiff, sharp-pointed leaves. The roots extend deeply into the sand.

13. DICHROMENA Michx.

Plants perennial; spikelets few, compressed, several- to many-flowered, in a dense terminal head, surrounded by an involucre of bracts, these often white at the base; scales spirally imbricate, some of them empty or with imperfect flowers; perianth none; stamens 3; style 2-cleft; achene lenticular, transversely rugose, capped by the persistent style base (tubercle).—About 20 species, in the Western Hemisphere.

Leaves 5-12 mm. wide; bracts green at the base. . . . 1. *D. Watsoni*.

Leaves 2-4 mm. wide; bracts sometimes whitish.

Plants with fibrous roots; scales thin, brownish; bracts green throughout. . . . 2. *D. radicans*.

Plants with rhizomes; scales firm, white; bracts white within the base. . . . 3. *D. ciliata*.

1. *Dichromena Watsoni* Britton, Bull. Torrey Club 15: 101. 1888.

Guatemala; Nicaragua; Costa Rica; Panama; in forest at low elevations, along the Atlantic coast; type collected in Guatemala.

Culms stout, tufted, 40–60 cm. high, leafy; leaves 15–20 cm. long, glabrous; bracts about 9, resembling the leaves; spikelets about 9, brown, 12–15 mm. long; achene obovoid, with a broad depressed tubercle.

2. *Dichromena radicans* S. & C. Linnaea 6:38. 1831. *D. pubera* Vahl, Enum. Pl. 2: 241, in part. 1806.

British Honduras; Guatemala; Honduras; Salvador; Nicaragua; Costa Rica; Panama; in wet soil, ascending to 1,300 m. Widely distributed in tropical America.

Culms densely tufted, 20–50 cm. high; leaves numerous, equaling or shorter than the culms, glabrous or pubescent; bracts ciliate at the base, elongate; spikelets 1–5, pointed, 1 cm. long or less.

The plants sometimes are proliferous. This is one of the common weedy sedges of Central America, occurring plentifully as a weed in waste or cultivated ground.

3. *Dichromena ciliata* Vahl, Enum. Pl. 2: 240. 1806. *D. nervosa* Vahl, op. cit. 241, in part. 1806.

British Honduras; Guatemala; Honduras; Salvador; Costa Rica; Panama; in moist soil, ascending to 1,400 m. Widely distributed in tropical America.

Culms 10–70 cm. high, slender; leaves 10–30 cm. long, glabrous or pilose; bracts 4–6, usually ciliate toward the base, 12 cm. long or less; spikelets 3–15, 1 cm. long or less, the scales often scabrous along the keel; achene 1 mm. long, ovoid-lanceolate, transversely rugose, brown or black.

Called “junco menudo” and “clavo” in Panama.

14. RYNCHOSPORA Vahl

Plants mostly perennial, sometimes annual, the culms 3-angulate or terete; spikelets oblong or fusiform, variously arranged, the scales 1-nerved, spirally imbricate; upper flowers staminate, the lower perfect; perianth of bristles, or sometimes wanting; stamens usually 3; style 2-cleft or rarely entire; achene lenticular or turgid, smooth or transversely rugose, capped by the persistent style base.—About 200 species, widely distributed, especially in warm regions.

The generic name is written *Rhynchospora* by some authors.

Spikelets all crowded in a single dense head.

Bracts 10–30 cm. long; leaves 8–15 mm. wide.... 1. *R. cephalotes*.

Bracts 4 cm. long or less; leaves 3 mm. wide or narrower.

Plants glabrous; bracts not ciliate..... 2. *R. globosa*.

Plants pubescent; bracts ciliate.

Bracts partly leaflike; outer spikelets reflexed or spreading.
3. *R. barbata*.

Bracts all thin and scarious; spikelets all erect.
4. *R. armerioides*.

Spikelets variously arranged but never in a single head.

Branches of the style equaling or longer than the undivided portion.

Bristles present.

Spikelets mostly solitary.....5. *R. marisculus*.

Spikelets fasciculate in the corymbs.....6. *R. glauca*.

Bristles none.

Achenes smooth.

Spikelets about 9 mm. long.....7. *R. longispicata*.

Spikelets 2-3 mm. long.....8. *R. Clarkei*.

Achenes reticulate or transversely rugose.

Spikelets 1-1.5 mm. long.....9. *R. micrantha*.

Spikelets 3-10 mm. long.

Achenes reticulate.....10. *R. hirsuta*.

Achenes transversely rugose.

Nutlets 1-2 in each spikelet.

Spikelets 2-5.....11. *R. Berterii*.

Spikelets numerous.

Achene not tridentate at the apex...12. *R. tenuis*.

Achene tridentate at the apex.....13. *R. setacea*.

Nutlets 3 or more in each spikelet.

Base of the style depressed, almost discoid; scales
very acute.....14. *R. eximia*.

Base of the style pyramidal; scales obtuse.

15. *R. robusta*.

Branches of the style short or none, much shorter than the undivided portion.

Spikelets in globose heads or headlike cymes.

Spikelets in globose heads 1 cm. in diameter.16. *R. cyperoides*.

Spikelets in headlike cymes 2-2.5 cm. in diameter.

17. *R. Torresiana*.

Spikelets not in globose heads or headlike cymes.

Spikelets fasciculate, yellow or yellow-brown.

18. *R. corymbosa*.

Spikelets mostly solitary, greenish or chestnut-brown.

Inflorescence much shorter than the basal leaves; leaves silvery.....19. *R. argentea*.

Inflorescence much surpassing the basal leaves; leaves green.

Bristles obsolete or nearly so.

Spikelets about 4 mm. long.....20. *R. polyphylla*.

Spikelets 6-9 mm. long.....21. *R. Schiedeana*.

Bristles equaling or longer than the achene.

Spikelets green or greenish.

Spikelets 3-4 mm. long.....22. *R. locuples*.

Spikelets 7-8 mm. long.....23. *R. aristata*.

Spikelets dark brown.

Achene about 1 mm. long, shorter than the bristles.
24. *R. vulcani*.

Achene about 2.5 mm. long, equaling the bristles.
25. *R. macrochaeta*.

1. *Rynchospora cephalotes* (L.) Vahl, Enum. Pl. 2: 237. 1806.
Scirpus cephalotes L. Sp. Pl. ed. 2. 76. 1762.

British Honduras; Guatemala; Honduras; Costa Rica; Panama; in moist soil, at 300 m. or less. Mexico; Jamaica; South America.

Plants with rhizomes, coarse, usually 1 m. high or more, the culms leafy, leaves 40 cm. long or less, 4-12 mm. wide, glabrous or nearly so; spikelets greenish, 50-100, collected in a dense ovoid head 2-4 cm. long; bracts large and leaflike; spikelets about 7 mm. long; bristles 6, longer than the achene; achene 1.5 mm. long, reticulate, castaneous, the beak longer than the body.

In Panama this species is sometimes given the name of "paja macho de monte," that is, tapir grass. It is a characteristic plant of thickets and forests.

2. *Rynchospora globosa* (HBK.) R. & S. Syst. Veg. 2: 89. 1817.
Chaetospora globosa HBK. Nov. Gen. & Sp. 1: 230. 1815.

Guatemala; Costa Rica; Panama; in dry fields, at 1,000 m. or less. Cuba; South America.

Plants glabrous or nearly so, 30-90 cm. high, in small dense tufts; leaves basal, 15-50 cm. long, 5 mm. wide or less, stiff and rigid, brown and indurate below; heads globose, 1-2 cm. in diameter; one of the bracts longer than the head, the others shorter; spikelets brownish, the scales rigid; bristles 5-6; achene fuscous, with a short beak.

Rynchospora epiglobosa Clarke (Kew Bull. Add. Ser. 8: 34. 1908), described from British Honduras, is closely related and perhaps not distinct.

3. *Rynchospora barbata* (Vahl) Kunth, Enum. Pl. 2: 290. 1837. *Schoenus barbatus* Vahl, Eclog. Amer. 2: 4. 1798.

Honduras; Panama; on dry hillsides and savannas, sometimes in pine forest, ascending to 1,300 m. Northern South America.

Plants in small dense tufts, the culms slender, 15-40 cm. high; leaves basal, pilose, usually much shorter than the culms, 1-2 mm. wide; heads globose, about 1 cm. in diameter, brownish, the bracts 4 cm. long or less; bristles twice as long as the achene, the latter broadly winged.

4. *Rynchospora armerioides* Presl, Rel. Haenk. 1: 197. *pl. 31, f. 2.* 1825.

Costa Rica; Panama; in savannas, at 460 m. or less; type from Panama. South America.

Culms tufted, 8-20 cm. high; leaves basal, shorter than the culms, more or less ciliate, 2-3 mm. wide; heads nearly 1 cm. high, pale brownish.

5. *Rynchospora marisculus* Nees, Linnaea 9: 297. 1834. *Rynchospora jubata* Liebm. Dansk. Vid. Selsk. Skrivt. 2: 66. 1849.

Guatemala; Costa Rica; in swamps, at 1,100 to 1,800 m. Southern Mexico, West Indies, and South America.

Plants glabrous, 0.5-1 m. high, with short rhizomes, the culms slender, leafy; leaves 20-40 cm. long, 4-6 mm. wide; inflorescence lax, much branched, the spikelets 5-7 mm. long, brown; bristles about 7, much longer than the achene, the latter transverse-undulate.

6. *Rynchospora glauca* Vahl, Enum. Pl. 2: 233. 1806. *R. Durandiana* Boeckl. Allgem. Bot. Zeitschr. 2: 94. 1896.

Guatemala; Honduras; Costa Rica; in moist soil, sometimes in pine forest or in sphagnum bogs, at 900-2,700 m. Tropics of both hemispheres.

Plants glabrous, with short rhizomes, 20-80 cm. high, the culms leafy; leaves 50 cm. long or less, 2-4 mm. wide; corymbs 1-2 cm. broad, the spikelets 3 mm. long, brown; bristles 6, slightly longer than the achene, this castaneous, undulate, short-beaked.

Rynchospora Schaffneri Boeckl. (Linnaea 37: 575. 1873) does not appear to differ essentially, at least as concerns the Central American specimens so determined by Clarke.

7. *Rynchospora longispicata* Boeckl. Linnaea 37: 600. 1873.

Costa Rica (Laguna de Buenos Aires, alt. 200 m.). West Indies and South America.

Plants glabrous, with short rhizomes, the culms very slender, 30-40 cm. long; leaves about equaling the culms, 1-2 mm. wide, stiff; corymbs lax, the spikelets few, yellowish brown; bristles none; achene smooth, brown, short-beaked.

8. **Rynchospora Clarkei** Rose, Contr. U. S. Nat. Herb. 10: 464. 1908. *Rynchospora Pringlei* Clarke, Kew Bull. Add. Ser. 8: 89. 1908, non Greenm. 1903.

Costa Rica (savannas, Buenos Aires, alt. 200 m.); Panama. Mexico.

Plants annual, densely tufted, slender, 4-8 cm. high, glabrous; leaves about 1 mm. wide; corymbs very small, the spikelets few, brownish, containing 1-4 achenes; achenes 0.5 mm. long, smooth, greenish.

9. **Rynchospora micrantha** Vahl, Enum. Pl. 2: 231. 1806.

British Honduras; Guatemala; Salvador; Panama; near sea level. Tropical and subtropical America; western Africa.

Plants annual, slender, 10-50 cm. high, the culms leafy; leaves 20 cm. long or less, 2-3 mm. wide; corymbs lax, with very slender, spreading branches, the spikelets numerous, greenish; bristles none; achene minute, yellowish brown, transversely rugose, short-beaked.

10. **Rynchospora hirsuta** Vahl, Enum. Pl. 2: 231. 1806. *Schoenus hirsutus* Vahl, Eclog. Amer. 1: 6. 1796.

Panama; in savannas, near sea level. Cuba; northern South America.

Plants with fibrous roots, 10-30 cm. high, pilose or glabrous, the culms slender, leafy; leaves equaling or shorter than the culms, 2-3 mm. wide; corymbs 2-4 cm. broad; spikelets numerous, 4 mm. long, brown or castaneous; bristles none; achene coarsely reticulate, yellow-brown.

11. **Rynchospora Berterii** (Spreng.) Clarke in Urban, Symb. Antill. 2: 119. 1900. *Hypolytrum Berterii* Spreng. Neue Entd. 1: 241. 1820.

British Honduras, near sea level. Greater Antilles.

Plants very slender, with short stolons and rhizomes, 10 cm. high or less; leaves 2-15 cm. long, 1 mm. wide, glabrous or pilose near the base; spikelets 2-5, fasciculate-spicate at the apex of the culm, 2-4 mm. long, lanceolate; scales 6-7, only 1 or rarely 2 fertile, whitish; bristles none; achene globose, sessile, transversely undulate, brown or nearly black, the beak half as long as the achene, conic, blackish.

12. **Rynchospora tenuis** Link, Jahrb. 3: 76. 1820.

Guatemala (near Huehuetenango, at 1,950-2,400 m.); Honduras (in wet meadow and on open banks at 1,100-1,400 m.). Mexico, West Indies, and South America.

Plants glabrous, 10-30 cm. high, with very short rhizomes, slender; leaves equaling or shorter than the culms, 1-3 mm. wide; corymbs axillary and terminal, 1-4 cm. broad; spikelets numerous, 3-4 mm. long, pale; bristles none; achene 1 mm. long, brownish, transversely rugose, the tubercle short and broad.

13. *Rynchospora setacea* (Berg) Boeckl. Vid. Medd. Kjöbenhavn 1869: 159. 1870. *Schoenus setaceus* Berg, Act. Helv. 7: 130. pl. 9. 1772. *R. tenerrima* Spreng. Syst. Veg. Cur. Post. 26. 1827.

Panama (Chepo, in dry fields). West Indies and South America.

Plants slender, glabrous, 10–30 cm. high, with fibrous roots, the culms leafy; leaves 10–15 cm. long, 1–2 mm. wide; corymbs dense, the spikelets few, 4 mm. long, pale; bristles none; achenes 1 mm. long, transversely undulate, brown, the beak very short.

14. *Rynchospora eximia* (Nees) Boeckl. Linnaea 37: 601. 1873. *Spermodon eximius* Nees in Seem. Bot. Voy. Herald 222. 1854.

Honduras; Panama; in wet fields or bogs, ranging from sea level to 1,400 m.; type from Panama. Mexico; Cuba.

Plants glabrous, 10–45 cm. high, with fibrous roots, the culms leafy; leaves often exceeding the culms, 2–3 mm. wide; corymbs open, the spikelets numerous, 7–10 mm. long, dark brown, long-pedicellate; bristles none; achenes yellow-brown, transversely undulate, the beak very short.

This species was reported from Costa Rica by Clarke, but the specimen of the cited collection seen by the writer is *Fimbristylis diphylla*.

15. *Rynchospora robusta* (Kunth) Boeckl. Linnaea 37: 616. 1873. *Dichromena robusta* Kunth, Enum. Pl. 2: 283. 1837.

Guatemala; Costa Rica; Panama; in swamps, at 1,000 to 1,300 m. Southern Mexico; South America.

Plants glabrous, 0.6–1 m. high or larger, with short rhizomes, the culms leafy; leaves shorter than the culms, about 6 mm. wide; cymes large and broad, the spikelets numerous, 7 mm. long, brown; bristles none.

16. *Rynchospora cyperoides* (Sw.) Mart. Denkschr. Akad. Wiss. Muenchen 6: 149. 1816–17. *Schoenus cyperoides* Sw. Prodr. Veg. Ind. Occ. 19. 1788. *R. polycephala* Wydler ex Kunth, Enum. Pl. 2: 291. 1837.

British Honduras; Guatemala; Costa Rica; Panama; in savannas or along shores and stream banks, near sea level. Mexico, West Indies, and South America; tropical Africa.

Plants glabrous or nearly so, 20–80 cm. high, with short rhizomes; leaves longer or shorter than the culms, 2–5 mm. wide; heads 1–25, laxly paniculate, about 1 cm. in diameter, brown; bristles 6, slightly shorter than the achene, the latter 1 mm. long, smooth or transversely undulate, brownish, the beak equaling the achene.

17. *Rynchospora Torresiana* Britt. & Standl. ex Standl. Journ. Washington Acad. Sci. 15: 473. 1925.

Known only from the region of the type locality, in wet forest at El Muñeco, south of Navarro, Province of San José, Costa Rica, at 1,400 m.

Plants erect, 1-2 m. high; leaves 9-13 mm. wide, pale green, the margins scaberulous; spikelets sessile or nearly so, very numerous, in dense headlike cymes 2-2.5 cm. in diameter, the heads few, solitary on long, slender, axillary and terminal peduncles, rarely sessile, sometimes in clusters of 3 on the peduncle; spikelets 1 cm. long, pale greenish; bristles 4, slightly shorter than the achene, antrorse-scaberulous; achene obovoid-orbicular, plano-convex, 2.5-3 mm. long, pale brownish, finely reticulate, rounded at the apex, the beak 4-5 mm. long, green, its base one-third as broad as the achene.

18. *Rynchospora corymbosa* (L.) Britton, Trans. N. Y. Acad. Sci. 11: 85. 1892. *Scirpus corymbosus* L. Amoen. Acad. 4: 303. 1788. *R. aurea* Vahl, Enum. Pl. 2: 229. 1806. ?*R. orizabensis* Clarke ex Britton, Trans. N. Y. Acad. Sci. 11: 85. 1892.

Guatemala; Nicaragua; Costa Rica; Panama; in swamps or moist soil, ascending to 1,290 m. Tropical regions of both hemispheres.

Plants glabrous or nearly so, stout, often 1 m. high or more, with fibrous roots; leaves 30-60 cm. long, 1-1.5 cm. wide; panicles 40 cm. long or less, dense, the spikelets very numerous, 6-10 mm. long, containing a single achene; bristles 6, longer than the achene, upwardly scabrous; achene 2-3 mm. long, smooth or rugose, blackish, the beak equaling the achene.

Called "navajuela" in Mexico.

19. *Rynchospora argentea* Standl. Contr. U. S. Nat. Herb. 18: 87. 1916.

Type from Puerto Obaldía, San Blas Coast, Panama.

Culms naked, very slender and weak, 20 cm. high or less; leaves 30-40 cm. long, 2-3 cm. wide, glabrous; corymbs small, the spikelets few, pale, 7 mm. long, solitary, pedicellate; bristles 6, white.

20. *Rynchospora polyphylla* Vahl, Enum. Pl. 2: 230. 1806. *Schoenus polyphyllus* Vahl, Eclog. Amer. 2: 5. 1798. *R. costaricensis* Boeckl. Allgem. Bot. Zeitschr. 2: 110. 1896.

Guatemala; Honduras; Salvador; Nicaragua; Costa Rica; Panama; in moist soil, often in forests, ascending to 2,000 m. Mexico, West Indies, and northern South America.

Plants glabrous or pubescent, with slender rhizomes, the culms very leafy, often 1 m. long, weak and often reclining; leaves usually equaling the culms, 4-7 mm. wide; panicles elongate, narrow, the spikelets very numerous, pale; achene 1 mm. long, reticulate, castaneous, the beak about as long as the achene.

21. *Rynchospora Schiedeana* Kunth, Enum. Pl. 2: 300. 1837. *R. Schiedeana* var. *varica* Clarke, Contr. U. S. Nat. Herb. 10: 463. 1908. ?*R. Tuerckheimii* Clarke ex Britton, Trans. N. Y. Acad. Sci. 11: 85. 1892.

Guatemala; Costa Rica; at 1,300 to 1,800 m. Mexico.

Plants about a meter high, nearly glabrous, the culms very leafy; leaves 5–15 mm. wide; panicles elongate, the spikelets numerous, pale; achene smooth, with long beak.

22. *Rynchospora locuples* Clarke, Bot. Jahrb. Engler 34: Beibl. 78: 5. 1904.

Type from Copey, Costa Rica, at 1,800 m. Also in Colombia.

Plants about a meter high, nearly glabrous, the culms stout, leafy; leaves 12–17 mm. wide; panicles very large, the spikelets extremely numerous, pale, maturing a single achene; achene 1–1.5 mm. long, pale, reticulate, the beak longer than the achene.

23. *Rynchospora aristata* Boeckl. Flora 40: 36. 1873.

Guatemala; Nicaragua; mountain regions. Jamaica, Mexico, and northern South America.

Plants glabrous or nearly so, up to 1 m. high, the culms leafy, the rootstocks short and thick; leaves 5–12 mm. wide; panicles elongate, the spikelets numerous; bristles 3–5, equaling the achene, the latter smooth, dark brown, with elongate beak.

24. *Rynchospora vulcani* Boeckl. Linnaea 37: 638. 1873. *R. Pittieri* Boeckl. Allgem. Bot. Zeitschr. 2: 109. 1896.

Costa Rica, in the higher mountains at 2,000–3,000 m.; type from Volcán de Barba.

Plants glabrous or nearly so; leaves 4–6 mm. wide; panicle of 3–4 pedunculate corymbs, the spikelets numerous; bristles 4–5; achene smooth or obscurely rugulose, the beak shorter than the achene.

25. *Rynchospora macrochaeta* Steud. in Lechler, Berber. Amer. Centr. 56. 1857. *R. Hoffmanni* Boeckl. Linnaea 37: 637. 1873.

Costa Rica; Panama; high peaks, at 2,000 to 3,000 m. South America.

Plants glabrous or nearly so, about 1 m. high, with short rootstocks, the culms stout, leafy; panicles of few corymbs, the spikelets numerous, 6–8 mm. long; bristles 4–6; achene smooth, minutely reticulate, brown or pale, the beak equaling or longer than the achene.

15. SCLERIA Berg

Annuals or perennials, with leafy culms; spikelets small, clustered, spicate or paniculate; flowers monoecious, the staminate and pistillate in the same or separate clusters; pistillate spikelets 1-flowered, the staminate many-flowered, the scales spirally imbricate; perianth none; style 3-cleft, deciduous; achene globose or ovoid, obtuse, hard and bonelike, usually subtended at the base by a disk.—About 200 species, widely distributed in temperate and tropical regions.

Spikelets not all unisexual, some of the pistillate ones with staminate flowers.

Spikelets in a simple spike.

Plants perennial, with rhizomes.....1. *S. hirtella*.

Plants annual, with fibrous roots.....2. *S. verticillata*.

Spikelets paniculate.

Achene very rugose.....3. *S. Liebmanni*.

Achene smooth.

Inflorescence long-exserted; achenes 1.5 mm. long and as broad, nearly truncate at the apex.....4. *S. Purdiei*.

Inflorescence little exserted; achenes 2.5 mm. long, much longer than broad, rounded at the apex.5. *S. lithosperma*.

Spikelets all unisexual.

Margin of the disk (beneath the achene) laciniate or ciliate.

Margin of the disk laciniate.

Achenes tuberculate.....6. *S. panicoides*.

Achenes smooth.

Achenes white.....7. *S. latifolia*.

Achenes purplish.....8. *S. arundinacea*.

Margin of the disk ciliate.

Achene 5-6 mm. long; leaves 1.5-5 cm. wide.9. *S. paludosa*.

Achenes less than 3 mm. long; leaves 0.5-2 cm. wide.

Disk long-ciliate with very numerous dark hairs; style base black or nearly so.10. *S. mitis*.

Disk short-ciliate with few whitish hairs; style base light brown.....11. *S. microcarpa*.

Margin of disk neither laciniate nor ciliate.

Achenes tuberculate or reticulate.

Plants with fibrous roots; achenes glabrous....12. *S. setacea*.

Plants with rootstocks; achenes pubescent....13. *S. bracteata*.

Achenes smooth.

Achenes 3-5 mm. long.

Branches of the inflorescence hirsute.....14. *S. secans*.

Branches of the inflorescence scaberulous.

Disk subentire, the margin reflexed....15. *S. lacustris*.

Disk 3-lobate, margin not reflexed.16. *S. setuloso-ciliata*.

Achenes 2.5 mm. long or less.

Achenes white.....17. *S. pterota*.

Achenes chestnut or purple.....18. *S. melaleuca*.

1. *Scleria hirtella* Sw. Prodr. Veg. Ind. Occ. 19. 1788.

Guatemala; Costa Rica; Panama; in meadows and on open hillsides, ascending to 1,300 m. Widely distributed in tropical America; Africa.

Plants pubescent, with slender rhizomes, the culms slender, 20–60 cm. long or more; leaves 2–4 mm. wide; spikes 5–20 cm. long, the spikelets hispidulous, in remote clusters; achene 1 mm. long, smooth, white, contracted below.

Clarke (Contr. U. S. Nat. Herb. 10: 466. 1908) reported a collection of *S. distans* Poir. from Costa Rica, but the fragmentary specimen in the United States National Herbarium of the number cited seems to belong rather to *S. hirtella*.

2. *Scleria verticillata* Muhl. ex Willd. Sp. Pl. 4: 317. 1805.

Honduras, in open pine forest at 1,300 m. Mexico, Cuba, and the southeastern United States.

A slender low annual, 60 cm. high or less; leaves about 1 mm. wide, shorter than the culm, the lower very short, the sheaths sometimes pubescent; spikelets in several separated clusters, forming a usually simple spike; achene globose, 1 mm. in diameter, with sharp transverse ridges or somewhat reticulate.

3. *Scleria Liebmanni* Steud. Syn. Pl. Glum. 2: 179. 1855. *Hypoporum micrococcum* Liebm. Dansk. Vid. Selsk. Skrivt. V. 2: 255. 1851. *S. costaricensis* Boeckl. Allgem. Bot. Zeitschr. 2: 157. 1896.

British Honduras; Costa Rica; Panama; in swamps and savannas at low elevations. Mexico, Cuba, and South America.

Plants annual, pubescent below, very slender, the culms 20–30 cm. long; leaves 1–2 mm. wide; panicles about 10 cm. long, the spikelets in small sessile clusters, the bracts shorter than the spikelets; achenes 1 mm. long, white.

This species was reported from Panama by Nees (in Seem. Bot. Voy. Herald 223. 1854) as *Hypoporum verticillatum*, and by Hemsley as *Scleria verticillata* Muhl.

4. *Scleria Purdiei* Clarke, Kew Bull. Add. Ser. 8: 57. 1908. *S. Hitchcockii* Standl. Contr. U. S. Nat. Herb. 18: 88. 1916.

Panama (El Boquete, on grassy hillside, at 1,000 m.). Colombia and Venezuela.

Plants slender, 50–70 cm. high; leaves 12–18 cm. long, 2–4 mm. wide, nearly glabrous; panicles about 10 cm. long, the branches very slender; spikelets sessile in small dense clusters; achene globose, 1.2 mm. in diameter, white, glabrous, the disk fused with the achene as a short stipe.

5. *Scleria lithosperma* (L.) Sw. Prodr. Veg. Ind. Occ. 18. 1788. *Scirpus lithospermus* L. Sp. Pl. 51. 1753.

Costa Rica; Panama; in moist soil, ascending to about 1,000 m. Tropical regions of both hemispheres.

Plants glabrous or nearly so, with stout rootstocks, the culms 30–90 cm. long; leaves 10–30 cm. long, 3–6 mm. wide; panicles sparsely branched, the spikelets in distant sessile clusters; achenes smooth, white, glabrous, the disk fused with the base and nearly obsolete.

6. *Scleria panicoides* Kunth, Enum. Pl. 2: 348. 1837.

Panama (Empire Station). South America; type from Brazil.

Culms 30–60 cm. high, scabrous on the angles; leaves about 30 cm. long and 2.5 cm. wide, pubescent beneath; panicle branches hirtous; bracts elongate; achene globose, hirtellous.

It is probable that the oldest name for this species is *Scleria foveolata* Cav. (Icon. Pl. 5: 35. 1799), which was based on specimens collected on flats near Ancón Hill, Canal Zone.

7. *Scleria latifolia* Sw. Prodr. Veg. Ind. Occ. 18. 1788.

Guatemala (Cobán, border of forest, at 1,300 m.); Costa Rica. Lesser Antilles; Venezuela.

Plants stout, 1 m. high or more; leaves 40–60 cm. long, 3–5 cm. wide, the sheaths broadly 3-winged; panicles 40 cm. long or less; achene globose, 3 mm. in diameter, the disk 3-lobate.

8. *Scleria arundinacea* Kunth, Enum. Pl. 2: 347. 1837.

British Honduras; Guatemala; Costa Rica; Panama; in swamps at chiefly low elevations, ascending to 900 m. Lesser Antilles; South America.

Plants large and coarse, 1–2 m. high; leaves 2.5–5 cm. wide, glabrous, scabrous on the margins, the sheaths broadly 3-winged; panicles large and much branched, puberulent; achenes 3 mm. in diameter, globose, smooth.

It is doubtful whether this is more than a mere form of *S. latifolia*, separable only by the color of the achenes. In Costa Rica the plant is called “navajuela,” and in Venezuela “cortadera.”

9. *Scleria paludosa* Kunth, Enum. Pl. 2: 344. 1837. *Ophrys-scleria asperrima* Liebm. Dansk. Vid. Selsk. Skrivt. V. 2: 261. 1851. *S. asperrima* Steud. Syn. Pl. Glum. 2: 170. 1855. *S. macrocarpa* Salzm. Linnaea 38: 521. 1874.

Guatemala; Honduras; Nicaragua; Costa Rica; Panama; along streams or in ditches and swamps near sea level. Cuba; South America.

Plants stout, coarse, 1–2 m. high, glabrous except in the inflorescence, with stout rhizomes; leaves 20–40 cm. long, the sheaths 3-winged; panicles 20–40 cm. long, much branched; achenes ovoid, white or yellowish, smooth, the disk shallowly 3-lobate.

10. *Scleria mitis* Berg, Vet. Akad. Handl. Stockh. 26: 145. 1765.

Guatemala; Panama; in wet soil near sea level. West Indies and South America.

Plants stout and coarse, 1-2 m. high, nearly glabrous; leaves 30-50 cm. long, the sheaths 3-winged; panicles narrow, 50 cm. long or less, much branched; achenes globose-ovoid, white, the disk truncate.

Known in Cuba by the name "cortadera."

11. *Scleria microcarpa* Nees, Linnaea 9: 302. 1834.

Guatemala; Honduras; Panama; in marshes or wet soil, ascending to 350 m. West Indies and South America.

Plants stout, with horizontal rhizomes, about 1 m. high; leaves 20-30 cm. long, 8-11 mm. wide, the sheaths narrowly 3-winged; panicles narrow, 20-50 cm. long; achenes 1-2 mm. long, ellipsoid or ovoid, smooth, white, the disk subentire.

Called "cortadera" in Cuba and Porto Rico.

12. *Scleria setacea* Poir. in Lam. Encycl. 7: 4. 1806. *S. coriacea* Liebm. Dansk. Vid. Selsk. Skrivt. V. 2: 259. 1851. *S. hemilaphra* Steud. Syn. Pl. Glum. 2: 169. 1855.

Guatemala; Salvador; Costa Rica; Panama; chiefly on the Pacific slope, at 1,350 m. or less. Southeastern United States, Mexico, and the West Indies.

Plants with fibrous roots, glabrous or nearly so, 30-60 cm. high, slender; leaves 2-4 mm. wide, the sheaths very narrowly winged; panicles small, axillary, with elongate bracts; achenes 1.5-2 mm. long, subglobose, the disk with 3 small lobes.

In Salvador the name "navajuela" sometimes is applied to this species. The type of *S. coriacea* was collected in Guanacaste, Costa Rica.

13. *Scleria bracteata* Cav. Icon. Pl. 5: 34. pl. 451. 1799.

British Honduras; Guatemala; Costa Rica; Panama; in wet soil at 650 m. or less; type collected near Ancón, Panama. Southern Mexico and South America.

Plants coarse, about 1 m. high, with stout rhizomes, copiously pubescent; leaves about 1 cm. wide, with very scabrous margins, the sheaths scarcely winged; panicles axillary and terminal, the upper ones staminate, usually brownish, conspicuously bracteate; achenes 2 mm. long, globose, often purplish, the disk 3-lobate.

Called "navajuela" in Costa Rica, and in Panama "cortadera" and "cuchillito."

14. *Scleria secans* (L.) Urban, Symb. Antill. 2: 169. 1900. *Schoenus secans* L. Syst. Nat. ed. 10. 865. 1759. *Scleria reflexa* HBK. Nov. Gen. & Sp. 1: 232. 1816.

Guatemala; Costa Rica; Panama; in wet soil, chiefly in thickets, at 700 m. or less. Southern Mexico, West Indies, and South America.

Plants perennial, the culms long and weak, often reclining on shrubs or scandent to a height of 3 m. or more; leaves 4-7 mm. wide, stiff, very scabrous on the margins; panicles small, terminal and axillary, conspicuously bracteate, purplish or castaneous; achene smooth, white, globose, the disk subentire.

Called "navajuela" in Costa Rica. Both this species and *S. bracteata* are great pests in the regions where they occur abundantly, usually in swamps at low elevations. The stems often form impenetrable tangles, and the exceedingly sharp-edged leaves cut one's flesh mercilessly unless great care is exercised when in the vicinity of the plants.

15. *Scleria lacustris* C. Wright in Sauvalle, Fl. Cub. 185. 1873. *S. Tonduzii* Boeckl. Allgem. Bot. Zeitschr. 2: 160. 1896.

Costa Rica (Río Tuis, alt. 650 m.). South America; Cuba.

Plants large and coarse, nearly glabrous; leaves 60 cm. long and 11 mm. wide or smaller, the sheaths winged; panicles large, much branched, rigid, dense, purplish; achenes 3 mm. long, white or purplish, smooth.

16. *Scleria setuloso-ciliata* Boeckl. Flora 65: 30. 1882.

Guatemala; type from Mazatenango. Chiapas.

Plants stout, 0.5-1 m. high, tufted; leaves about 1 cm. wide, scabrous on the margins, the sheaths narrowly winged; panicles small, dense, with elongate bracts; achenes ovoid, smooth, whitish.

17. *Scleria pterota* Presl in Oken, Isis 21: 268. 1828. *S. pratensis* Nees in Mart. Fl. Bras. 2^a: 179. 1842. *S. Pittieri* Boeckl. Allgem. Bot. Zeitschr. 2: 159. 1896.

Guatemala; Salvador; Costa Rica; Panama; in forests and thickets, at 500 m. or less. Mexico, West Indies, and South America.

Plants with short rhizomes, 30-80 cm. high, rather stout, nearly glabrous; leaves 30 cm. long and 1 cm. wide or smaller; panicles axillary, small, sparsely branched, green or brownish, the bracts inconspicuous; achene 2 mm. long, subglobose, the disk 3-lobate.

Known in Panama by the name "cortadera."

18. *Scleria melaleuca* S. & C. Linnaea 6: 29. 1831.

British Honduras; Guatemala; Honduras; Nicaragua; Costa Rica; Panama; in wet soil, chiefly in forest or thickets, at 900 m. or less. Widely distributed in tropical America.

Plants 30-80 cm. high, glabrous or nearly so, with rhizomes; leaves 20-30 cm. long, 1 cm. wide or less, the sheaths narrowly winged; panicles small, axillary, rigid, sparsely branched, purplish; achene 1.5-2 mm. long, subglobose, smooth, shining, the disk 3-lobate.

The name applied to the plant in Honduras is "navajuela." The species is one of the most common weedy sedges of Central America. The plant probably is only a color form of *S. pterota*, and worthy of recognition only as a variety of that species.

16. CALYPTROCARYA Nees

A genus of about 7 species, in tropical America.

1. *Calyptracarya glomerulata* (Brongn.) Urban, Symb. Antill. 2: 169. 1900. *Becquerelia Calyptracarya* Brongn. in Duperrey, Voy. Coquille 2: 163. 1829. *C. fragifera* Kunth, Enum. Pl. 2: 364. 1837. *C. palmetto* Nees in Mart. Fl. Bras. 2¹: 195.

British Honduras; Guatemala; Nicaragua; Costa Rica; Panama; in forests or swamps, at altitudes of 350 m. or less. Also in South America.

Plants perennial, with short thick rootstocks, leafy; culms 40 cm. high or less; leaves linear, 4–6 mm. wide, 3-nerved, usually longer than the culms, glabrous or nearly so, scabrous on the edges; spikelets capitate, in axillary corymbs; flowers unisexual; pistillate spikelet terminal, 1-flowered, without bristles, the staminate spikelets lateral, 1–4-flowered; stamen 1; style bifid; achene brownish, globose, puberulent, about 1 mm. long.

17. HYPOLYTRUM L. Rich.

A genus of about 25 species, in the tropics of both hemispheres.

1. *Hypolytrum nicaraguense* Liebm. Dansk. Vid. Selsk. Skrivt. 2: 47. 1849.

British Honduras; Guatemala; Nicaragua; Costa Rica (Cocos Island); Panama; type from Río San Juan, Nicaragua; growing near sea level, in swamps or on stream banks. Brazil.

Plants perennial, about 1 m. high, the culms triangular, stout, leafy; leaves linear, 3 cm. wide, the margins very scabrous; inflorescence corymbose-paniculate, many-flowered; flowers unisexual, the spikelets 3-flowered, the terminal flower pistillate; stamen 1; style bifid; achene ovoid, 2 mm. long.

18. DIPLASIA L. Rich.

The genus consists of a single species.

1. *Diplasia karataefolia* L. Rich. ex Pers. Syn. Pl. 1: 70. 1805.

Costa Rica (Palmitales de las Lomas del Silencio, Diquís Valley, alt. 600 m.). Trinidad, Guianas, and Brazil.

A coarse perennial, 1 m. high or more, the culms leafy, triangular; leaves up to 1 m. long and 5 cm. wide, very scabrous on the margins; flowers unisexual, 6–9 or more in each spikelet, the lower ones staminate, the terminal one pistillate; spikes numerous, umbellate-

paniculate, terete, 1.5–3 cm. long, 3 mm. thick, the scales ferruginous, very obtuse, indurate; stamen 1; style 2-cleft; achene 5 mm. long, ellipsoid, smooth, dark brown.

Called "zacatón" in Costa Rica.

For some reason unknown to the writer, whether by a slip of the pen or for some other cause, this plant was reported from Costa Rica by Clarke (Contr. U. S. Nat. Herb. 10: 461. 1908) as *Dulichium arundinaceum* (L.) Britton, a species to which it certainly bears little resemblance. Clarke's synonymy and description relate wholly to the latter plant.

19. MAPANIA Aubl.

Large coarse glabrous perennials; spikelets in dense ovoid spikes, these in dense terminal leafy-bracted heads; spikelets composed of 6 scales, the 2 lower staminate, the 3 above these sterile, the uppermost pistillate; style 2–3-cleft. — About 35 species, in the tropics of both hemispheres.

Basal leaves none 1. *M. sylvatica*.

Basal leaves present 2. *M. pycnocephala*.

1. *Mapania sylvatica* Aubl. Pl. Guian. 1: 47. pl. 17. 1775.

Costa Rica (Carillo, at 300 m.); Panama. Venezuela and the Guianas; type from French Guiana.

Culms 30–60 cm. long; bracts 3, as much as 14 cm. long and 6 cm. wide; spikes few, 1–2 cm. long, ferruginous; style trifid.

2. *Mapania pycnocephala* Benth. Journ. Linn. Soc. Bot. 15: 512. 1887. *Hypolytrum pycnocephalum* Benth. Bot. Voy. Sulph. 177. 1844.

Costa Rica (Carillo, at 300 m.). Venezuela and Colombia.

Culms 30–60 cm. long; basal leaves 30–40 cm. long, 2–3 cm. wide; bracts 3, large, resembling the leaves; heads 1–2 cm. broad, brown; style bifid.

20. UNCINIA Pers.

Perennials, the culms erect, leafy below; flowers unisexual, spicate; bracts 2, connate and forming a bicarinate utricle, this enclosing the ovary; a rudiment of a spikelet present in the utricle, setiform, the apex exerted and uncinat. — About 25 species, chiefly in the South Temperate Zone.

Spikes dense, 3 mm. in diameter; perigynia ciliate . . . 1. *U. hamata*.

Spikes lax, 2 mm. in diameter; perigynia not ciliate . . . 2. *U. tenuis*.

1. *Uncinia hamata* (Sw.) Urban, Symb. Antill. 2: 169. 1900. *Carex hamata* Sw. Prodr. Veg. Ind. Occ. 18. 1788. *U. jamaicensis* Pers. Syn. Pl. 2: 534. 1807. *U. mexicana* Steud. Syn. Pl. Cyp. 243. 1855.

Guatemala; Costa Rica; Panama; in virgin mountain forest, at 1,300-3,300 m. Jamaica; southern Mexico; South America.

Plants forming dense clumps, 30-60 cm. high; leaves 2-7 mm. wide; culms bearing a single spike, this 8-15 cm. long; utricles lanceolate; style 3-cleft; bristle more than twice as long as the utricle.

The plant is a very annoying one in the regions where it occurs abundantly, for the utricles adhere to one's clothes in great numbers by the hooked bristles, which are so sharp as to penetrate the flesh easily.

2. *Uncinia tenuis* Kunth, Enum. Pl. 2: 525. 1837.

Costa Rica (Volcán de Barba, alt. 2,500 m.). Ranging southward to Chile.

Plants slender, stoloniferous, about 30 cm. high; leaves equaling or longer than the culms, about 2 mm. wide; spikes 2.5-4 cm. long, the utricles glabrous.

21. CAREX L.

Contributed by Kenneth K. Mackenzie

Grasslike sedges, perennial by rootstocks; culms mostly triangular; leaves 3-ranked, the upper (bracts) elongate or short, and subtending the spikes of flowers or wanting; plants monoecious or sometimes dioecious; flowers solitary in the axils of scales (glumes); spikes one to many, either wholly pistillate, wholly staminate, androgynous or gynaeandrous; perianth none; staminate flowers of 3 (or rarely 2) stamens, the filaments filiform; pistillate flowers of a single pistil, with a style and 2-3 stigmas; achene triangular or lenticular, completely surrounded by the perigynium.—Species more than 1,000, widely distributed, most abundant in the temperate zones. In our area very largely confined to the higher altitudes, and only *Carex polystachya* and *Carex Donnell-Smithii* have been collected in any quantity.

Spikes sessile (short), forming an interrupted head; stigmas 2; achenes lenticular.

Perigynia with wing-margined body, broadest at the top.

1. *C. albolutescens*.

Perigynia with sharp-edged body, broadest towards the base.

Perigynia lanceolate, long-beaked, with the body nearly marginless, round-contracted at the base. 2. *C. Bonplandii*.

Perigynia ovate, shorter-beaked, with the body margined, rounded at the base. 3. *C. Purdiei*.

Spikes in panicles or the lower peduncled; stigmas 3 and achenes triangular (except in No. 8).

Spikes in panicles; very numerous.

Perigynia glabrous.

- Perigynia 2.5-4 mm. long, the beak 1 mm. long; achenes 1.5-2 mm. long; scales 2-3 mm. long... 4. *C. polystachya*.
 Perigynia 4.5-5 mm. long, the beak 1.5 mm. long; achenes 3 mm. long; scales 3-4.5 mm. long... 5. *C. Humboldtiana*.
 Perigynia scabrous-pubescent... 6. *C. scabrella*.
 Lateral spikes peduncled (at least the lower).
 Perigynia finely pubescent... 7. *C. planostachys*.
 Perigynia glabrous.
 Lateral spikes staminate at the apex, much elongate, narrowly linear.
 Stigmas 2... 8. *C. Lemanniana*.
 Stigmas 3... 9. *C. Donnell-Smithii*.
 Lateral spikes pistillate, oblong-cylindric... 10. *C. polysticha*.

1. *Carex albolutescens* Schwein. Ann. Lyc. N. Y. 1: 66. 1824. "*C. foenea* Willd." ex Ell. Bot. S. Car. 2: 533. 1824. *C. straminea* Schkuhr var. *foenea* Torr. Ann. Lyc. N. Y. 3: 395. 1836.

Guatemala (near Cobán, at 1,350 m.); Costa Rica (in bogs at 1,500-1,800 m.). Ranging from Massachusetts to northern South America.

Densely caespitose, the culms 30-80 cm. high, slender but stiff; leaf blades 2-3.5 mm. (rarely 4.5) mm. wide, the sheath green, striate ventrally nearly to the mouth; spikes 3-10, gynaeandrous, silvery-greenish or silvery-brownish, aggregated into a head 2-4 cm. long, the spikes ovoid, 6-10 mm. long, 4-6 mm. wide, obtusish, the perigynia numerous, appressed-ascending; scales ovate, obtusish, shorter than perigynia; perigynia very flat, plano-convex, 3-4 mm. long, 2 mm. wide, the body broadly obovate, strongly winged and serrulate, abruptly short-beaked, the beak one-third the length of the body, at length bidentate; achenes substipitate.

2. *Carex Bonplandii* Kunth, Enum. Pl. 2: 380. 1837. *C. heptastachya* Boeckl. Linnaea 39: 114. 1875. *C. Durandii* Boeckl. Allgem. Bot. Zeitschr. 2: 189. 1896.

Costa Rica, at 2,400-3,100 m. Also in the mountains of northern South America, extending as far south as Ecuador.

Rootstocks short-creeping, stout, lignescent; culms 25-50 cm. high, slender but stiff; leaf blades 1.5-2.5 mm. wide, the sheaths white-hyaline ventrally; spikes 4-12, aggregated into a head 1.5-3 cm. long, the terminal gynaeandrous, the lateral mostly pistillate, ovoid, 5-12 mm. long, with 6-20 appressed-ascending perigynia; scales ovate, shorter than perigynia, light brown, acute to short-cuspidate; perigynia lanceolate, plano-convex, 3-3.5 mm. long, 0.9-1.25 mm. wide, nearly nerveless ventrally, firm, narrowly sharp-edged to the round contracted base, serrulate above, tapering into the serrulate, shallowly bidentate beak shorter than the body; achenes short-stipitate.

3. *Carex Purdiei* Boott, Ill. Car. 1: 26. pl. 67. 1858.

Costa Rica, in the high mountains, at 2,000–3,000 m., on open wet banks, in paramos, and in sphagnum bogs. Mountains of northern South America, extending southward to Ecuador.

Rootstocks short-creeping, stout, lignescent; culms 25–80 cm. high, slender but stiff; leaf blades 1.5–3.5 mm. wide, the sheaths white-hyaline ventrally; spikes 6–12, aggregated into a head 2–4.5 cm. long, the terminal gynaeceandrous, the lateral mostly pistillate, ovoid, 5–12 mm. long, with 6–20 appressed-ascending perigynia; scales ovate, shorter than perigynia, light brown, acutish; perigynia ovate, plano-convex, 3.5 mm. long, 1.5 mm. wide, nearly nerveless ventrally, thickish, sharp-margined to the rounded base, serrulate above, contracted into the serrulate, shallowly bidentate beak much shorter than the body; achenes short-stipitate.

Very closely related to *C. Bonplandii*. Central American specimens have been referred erroneously to *C. echinata* Murr., *C. teretiuscula* Good., and *C. heptastachya* Boeckl.

4. *Carex polystachya* Sw. ex Wahl. Kongl. Akad. Handl. 24: 149. 1803. *C. cladostachya* Wahl. loc. cit. 1803. *C. mexicana* Presl, Rel. Haenk. 1: 204. 1830. *C. Hartwegii* Boott ex Benth. Pl. Hartw. 96. 1848. *C. acrolepis* Liebm. Dansk. Vid. Selsk. Skrivt. II. 5: 270. 1851. *C. Oerstedii* Liebm. op. cit. 272. 1851.

Guatemala; Salvador; Nicaragua; Costa Rica; in mountain thickets or forest, at 350–2,600 m. West Indies, Mexico, and northern South America.

Rootstocks woody; culms 25–60 cm. high; leaves numerous, clustered towards the base, the leaf blades thick, stiff, light green, long-attenuate, very rough, 2–7 mm. wide; spikes very many, in decompound panicles, androgynous, 5–9 mm. long, 3–4 mm. wide; scales ovate, many-striate, cuspidate to acute; perigynia narrowly obovoid, sharply triangular, not inflated, bright green, 2-keeled and many-nerved, stipitate, abruptly beaked, the beak strongly bidentate, half the length of the body or less.

This is by far the most abundant *Carex* of Central America, being, in fact, the only one that is of at all frequent occurrence. Usually it has been called *C. cladostachya*, but the name *C. polystachya* has page priority in publication. Both species were described from Jamaica.

5. *Carex Humboldtiana* Steud. Syn. Cyp. 208. 1855. "*C. polystachya* Sw." ex Kükenth. in Engl. Pflanzenreich IV. 20: 267. 1909. *C. macrosperma* Mackenzie, Bull. Torrey Club 36: 477. 1909.

Nicaragua; Costa Rica; Panama; in mountain forest at 1,200–1,800 m. Mexico, West Indies, and northern South America.

Rootstocks woody; culms 60–100 cm. high; leaves numerous, clustered towards the base, the leaf blades thick, stiff, light green,

long-attenuate, 2.5–6 mm. wide; spikes very many, in 6–10 erect peduncled panicles, androgynous, 5–10 mm. long, 4–6 mm. wide; scales ovate, many-striate, short-awned to obtuse; perigynia elliptic-obovoid, sharply triangular, not inflated, bright green, 2-keeled and obscurely nerved, stipitate, abruptly beaked, the beak shallowly bidentate, half the length of the body or less.

6. *Carex scabrella* Wahl. Kongl. Akad. Handl. 24: 149. 1803.

Guatemala (vicinity of Secanquím, Alta Verapaz, alt. 350 m.). West Indies.

Rootstocks stout; culms weak, 5–50 cm. high; leaves clustered near the base, the leaf blades light green, rather thin, long-attenuate, 0.5–1.5 mm. wide; spikes numerous, in about 5 spikelike panicles (the upper sessile, the lower long-peduncled), androgynous, with 3–6 ascending perigynia; scales ovate, acutish to awned, several-nerved; perigynia 3–4 mm. long, the body obovoid, sharply triangular, not inflated, prominently ribbed, subcoriaceous, tapering at the base, narrowed into a bidentate beak about 1 mm. long.

7. *Carex planostachys* Kunze, Suppl. Riedgr. 138. pl. 35. 1840–1850. "*C. Halleriana* Asso" ex Bailey, Proc. Amer. Acad. 22: 126. 1886. *C. Halleriana* subsp. *planostachys* Kunze ex Küenth. in Engler, Pflanzenreich IV. 20: 488. 1909.

Guatemala, in dry soil near Chaculá, at 1,600 m. Northward through Mexico to northeastern Texas.

Rootstocks short, stout, branching; culms up to 20 cm. high, rough, brownish at the base; leaves clustered above the base, the leaf blades 1–2.5 mm. wide, long-attenuate, rough above; terminal spike staminate, linear, 8–12 mm. long, short-peduncled; lateral spikes pistillate, the upper 1 or 2 contiguous, sessile, the lower slender-peduncled, basal, oblong, 5–10 mm. long, 3–4 mm. wide, 6–12-flowered; scales lance-ovate, sharp-keeled, acute to cuspidate; perigynia obovoid-elliptic, 3.5 mm. long, not inflated, many-ribbed, light green, substipitate, abruptly beaked, the beak 0.5 mm. long, obliquely cut.

8. *Carex Lemanniana* Boott, Trans. Linn. Soc. 20: 121. 1846. *C. Lemanniana* var. *simplex* Küenth. in Engl. Pflanzenreich IV. 20: 405. 1909. "*Carex pichinchensis* HBK." ex Boeckl. Linnaea 39: 147, in part. 1875.

Costa Rica, in the mountains at 2,000 m. or more. Extending southward in the mountains of South America to Ecuador.

Culms 25–60 cm. high, brownish at the base; leaves numerous, clustered near the base, the leaf blades 2.5–8 mm. wide, glaucous, coriaceous, stiff, long-attenuate; inflorescence not or but sparingly compound, the spikes usually 4–10, androgynous, linear-cylindric, 2–6 cm. long, 3.5–5 mm. wide, the pistillate part 20–40-flowered; scales lance-ovate, usually rough-awned, purplish black; perigynia oblong-ovate, 2.5 mm. long, 1 mm. wide, membranaceous, plano-convex, straw-colored and

strongly purplish-splashed, obscurely striate ventrally, finely several-nerved dorsally, serrulate above, rounded at the base, abruptly beaked, the beak straight, 0.5 mm. long, bidentate, the teeth short, scabrous within.

Central American material of this species has been confused with the South American species, *Carex pichinchensis* HBK. and *C. Jamesonii* Boott.

9. *Carex Donnell-Smithii* Bailey, Mem. Torrey Club 1: 56. 1889. *C. viridis* Boeckl. Linnaea 40: 330, in part. 1876, non Jungh. 1831. *C. Pittieri* Boeckl. Allgem. Bot. Zeitschr. 2: 190. 1896.

Guatemala; Honduras; Costa Rica; Panama; type from Pansa-malá, Department of Alta Verapaz, Guatemala; in thickets or forest, sometimes in paramos or sphagnum bogs, at 1,000-3,000 m.

Culms stout, 30-100 cm. high, purplish at the base; leaves numerous, the lower clustered, the leaf blades 3-10 mm. wide, glabrous, coriaceous, stiff, long-attenuate; inflorescence compound, 20-60 cm. long, the lower branches in 2's or 4's, the upper simple; spikes numerous, androgynous, narrowly linear-cylindric, 3-12 cm. long, 3.5-5 mm. wide, the pistillate part rather loosely 20-50-flowered; scales lance-ovate, usually rough-awned, purplish black; perigynia lanceolate, 3.5-4 mm. long, membranaceous, dull green, scarcely inflated, punctulate, 2-ribbed and strongly few-nerved, short-stipitate, abruptly beaked, the beak excurved, 1-1.5 mm. long, bidentate, the teeth stiffish, scabrous within.

Central American specimens of this species have been referred to *Carex Jamesonii* Boott, *C. Jamesonii* var. *gracilis* Bailey, *C. pichinchensis* HBK., and *C. viridis* S. & C.

10. *Carex polysticha* Boeckl. Vid. Medd. Kjobenhavn 57. 1869. *C. Underwoodii* Britton, Torreyia 5: 10. 1905.

Guatemala, near Cobán, Alta Verapaz, at 1,350 m. Jamaica and Santo Domingo; widely distributed in South America.

Rootstocks short, stout; culms 60-120 cm. high, stout, the basal sheaths purplish-tinged and filamentose; leaves strongly septate-nodulose, the lower clustered, the blades 8-18 mm. wide, often 30-60 cm. long, light green, stiff; terminal spike staminate, linear, 2-3 cm. long; lateral spikes 3-6, approximate, spreading or drooping, oblong-cylindric, 3-4 cm. long, 8-12 mm. wide, densely many-flowered; scales ovate-lanceolate, rough-awned; perigynia ovoid-lanceolate, 4.5 mm. long, triangular, scarcely inflated, subcoriaceous, olive-green, strongly ribbed, obliquely short-stipitate, tapering into the strongly bidentate beak 2 mm. long, the teeth erect, stiff, 1 mm. long.

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STUDIES OF AMERICAN PLANTS—V

BY

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STUDIES OF AMERICAN PLANTS—V

PAUL C. STANDLEY

Like the preceding papers of this series, the present one is devoted mainly to tropical American Rubiaceae. During the past few months the writer has been fortunate in receiving several thousand specimens in this group, and the results of their partial study appear upon the following pages.

Many of the new species described have been discovered in collections gathered recently in eastern Peru, especially in those made for Field Museum by Llewelyn Williams, and in others brought together by G. Klug. Still further new Peruvian Rubiaceae have been found in the collection made in the same region by Ellsworth P. Killip and A. C. Smith for the Smithsonian Institution, and in older Peruvian series received on loan from Berlin-Dahlem.

The majority of the Rubiaceae described here are the result of examination of more than 4,000 sheets lent by various European herbaria: Royal Botanic Gardens, Kew; Riksmuseets Botaniska Afdelning, Stockholm; Muséum d'Histoire Naturelle, Paris; and the Jardin Botanique Principal, Leningrad. To the curators of these herbaria the writer is deeply indebted for the generous loan of so large an amount of valuable material.

The collections thus received on loan consisted almost wholly of unnamed specimens, but many of the latter were found to be duplicate types or otherwise historical specimens. Others were associable with described species, but many proved to represent species quite new to science. Although the most recent collections have been found richest in new species, it is somewhat surprising to learn that series collected fifty years ago or even earlier contain many plants which never have been given names.

The finest series of Rubiaceae received for study by the writer consisted of about 700 sheets collected chiefly in the State of Paraná, Brazil, by the late P. Dusén, and forwarded on loan from Stockholm through the courtesy of Dr. Gunnar Samuelsson. The specimens were so admirably prepared and mounted that it was more than an ordinary pleasure to study them. They afforded a substantial number of undescribed species, represented by ample and complete material, and also many extensions of range for previously described species.

The loans received from Berlin-Dahlem included much recent material of high interest, especially from Brazil and eastern Peru. The Bolivian specimens already have been cited in *The Rubiaceae of Bolivia*. The specimens lent from Kew, Paris, and Leningrad were particularly valuable because of the many early collections amply represented among them.

Of the plants discussed on the following pages in families other than the Rubiaceae the most interesting and important are those obtained by William A. Schipp in British Honduras. Mr. Schipp's later collections have been no less varied than his former ones, and they have made a large addition to our knowledge of the British Honduran flora. Especially noteworthy are the four new species of *Psidium* or guava which he has discovered in the coastal pinelands.

Study of recent South American material of the Nyctaginaceae has revealed several new species from Peru, and necessitated an unfortunately large number of changes in nomenclature. There is presented, also, a long list of grasses which are additions to the known flora of Peru.

Unless otherwise indicated, the specimens cited on the following pages are in the herbarium of Field Museum.

ADDITIONS TO THE FLORA OF THE LANCETILLA VALLEY, HONDURAS

Too late for record in the recently published *Flora of the Lancetilla Valley* (Field Mus. Bot. 10. 1930), there was received for determination from Professor H. H. Bartlett of the University of Michigan a collection of plants made by Professor A. M. Chickering in the Tela region of Honduras. The collection includes two species, *Bauhinia hondurensis* and *Lysiostyles sericea*, described as new on subsequent pages, and the following species which were not included in the published flora:

Eichhornia azurea (Sw.) Kunth.—Progreso, *Chickering* 91. This common water hyacinth of Central America must be plentiful in the Tela region, and it is difficult to understand how it escaped record there.

Tillandsia juncea LeConte.—Near Lancetilla, *Chickering* 122.

Desmodium axillare (Sw.) DC.—Lancetilla, *Chickering* 207. A prostrate or creeping plant with white flowers.

Ouratea nitida (Sw.) Engl.—Tela, a small tree behind the beach, *Chickering* 46.

Cereus minutiflorus (Britt. & Rose) Vaupel.—An epiphyte on trees near Lancetilla, *Chickering* 65. Flowers white and pink.

Merinthopodium neuranthum (Hemsl.) Donn. Smith.—In deep forest along the river, Lancetilla, *Chickering* 194. The collector states that the plant is a medium-sized tree, but doubtless the statement is the result of incorrect observation, for the plant is ordinarily an epiphytic shrub.

GRAMINEAE

The majority of the grasses mentioned on the following pages are additions to the flora of Peru, which have been noted in the course of preparing an account of the family as it is represented in that country. Recent collectors in Peru have not devoted special attention to the grasses, in fact their collections appear to be rather deficient in these plants, yet their work has added a substantial number of species to the known flora of the country. Most of the specimens here cited have been determined by Dr. A. S. Hitchcock or Mrs. Agnes Chase.

Andropogon leucostachyus HBK. Nov. Gen. & Sp. 1: 187. 1816.

Reported heretofore from Ecuador and Bolivia, but not from Peru. One collection from the last country has been seen by the writer: Peru: In pasture, Chachapoyas, Dept. Amazonas, 2,700 m., January, 1930, *Williams* 7540.

Andropogon saccharoides Sw., var. **parvispiculus** (Hitchc.), comb. nov. *A. saccharoides* subsp. *parvispiculus* Hitchc. Contr. U. S. Nat. Herb. 24: 497. 1927.

Aristida capillacea Lam. Tabl. Encycl. 1: 156. 1791.

Reported previously from Ecuador and Bolivia, and therefore to be expected in Peru. The following specimen represents the species: Peru: Pampalca, between Huanta and Río Apurímac, Dept. Ayacucho, May, 1929, *Killip & Smith* 22216.

Aristida torta (Nees) Kunth, Enum. Pl. 1: 190. 1833. *Chaetaria torta* Nees, Agrost. Bras. 386. 1829.

The species is known to range from Brazil to Costa Rica, but it has not been reported from the central Andes. The following

collection extends the range: Peru: Open dry upland, San Roque, Dept. San Martín, 1,400 m., February, 1930, *Williams 7765*.

Axonopus aureus Beauv. Ess. Agrost. 12. 1812.

New to the flora of Peru: San Roque, fairly abundant, 1,400 m., February, 1930, *Williams 7764*.

Briza monandra (Hack.) Pilger, var. **condensata**, var. nov.—A forma typica differt culmis paullo robustioribus, paniculis angustis condensatis fere spiciformibus 2–5 cm. longis 5–6 mm. latis, ramis primariis valde abbreviatis subadpressis, spiculis subsessilibus. Peru: In loose clumps on rock ledges, northeastern exposure, Huarón, alt. 4,200 m., June 12, 1922, *Macbride & Featherstone 1154* (Herb. Field Mus. No. 517,665, type).

In the usual form of the species the panicles are loose and open, with slender spreading branches, and the spikelets are on long filiform pedicels.

In Hitchcock's account of the grasses of the central Andes (Contr. U. S. Nat. Herb. 24: 334. 1927), the name *Briza Mandoniana* is used for *Briza monandra*, but, as has been pointed out by Pilger, and as the synonymy cited by Hitchcock clearly shows, the latter name is the proper one for the species.

Cenchrus viridis Spreng. Syst. Veg. 1: 301. 1825.

Although a common and weedy grass of the lowlands of tropical America, this species seems not to be recorded from Peru. The following recent collections establish its occurrence there: Tarapoto, *Williams 5464*. Puerto Arturo, Yurimaguas, *Williams 5005*. Iquitos, common, *Williams 8073*.

Cenchrus pilosus HBK. Nov. Gen. & Sp. 1: 116. *pl.* 36. 1816.

In the central Andes Hitchcock has reported this sandbur only from the coast of Ecuador. It may now be placed on record as a member of the Peruvian flora: Dept. Piura, common along water-courses, *Haught 168, F76*.

Chloris polydactyla (L.) Sw. Prodr. Veg. Ind. Occ. 26. 1788. *Andropogon polydactylon* L. Sp. Pl. ed. 2. 1483. 1763.

A species of wide distribution, but new to the flora of Peru (Department of San Martín): Morales, Tarapoto, December, 1929, *Williams 5650*. Tarapoto, *Williams 5747*.

Echinochloa polystachya (HBK.) Hitchc. Contr. U. S. Nat. Herb. 22: 135. 1920. *Oplismenus polystachyus* HBK. Nov. Gen. & Sp. 1: 107. 1816.

This grass is not listed by Hitchcock in his enumeration of *The Grasses of Ecuador, Peru, and Bolivia*, but the following collection may now be reported from Peru: Iquitos, April 9, 1930, *Llewellyn Williams 8247*. Vernacular name, "gamalote."

Eragrostis acutiflora (HBK.) Nees, *Agrost. Bras.* 501. 1829. *Poa acutiflora* HBK. *Nov. Gen. & Sp.* 1: 161. 1816.

The species is not reported from the central Andes by Hitchcock, but the following specimen is at hand from Peru: Tarapoto, common, December, 1929, *Williams 5791*.

Gymnopogon foliosus (Willd.) Nees, *Agrost. Bras.* 426. 1829. *Chloris foliosa* Willd. *Sp. Pl.* 4: 924. 1806.

The plant is not reported from any part of the central Andes by Hitchcock. The following collection of recent date is at hand from Peru: Lamas, Dept. San Martín, 840 m., December 19, 1929, *Williams 6461*.

Homolepis aturensis (HBK.) Chase, *Proc. Biol. Soc. Washington* 24: 146. 1911. *Panicum aturense* HBK. *Nov. Gen. & Sp.* 1: 103. *pl.* 33. 1816.

This species is not recorded from Peru, but the following recent specimens may now be listed: Peru (Department of Loreto): Caballo-Cochoa, *Williams 2205*. Iquitos, *Williams 7964*. Lower Río Nanay, *Williams 311*. Fortaleza, Yurimaguas, *Williams 4210*. Nanay Hills, *Williams 262*. Vernacular name, "toro urcu."

Hymenachne donacifolia (Raddi) Chase, *Journ. Washington Acad. Sci.* 13: 177. 1923. *Panicum donacifolium* Raddi, *Agrost. Bras.* 44. 1823.

In the central Andes this aquatic grass has been reported from Ecuador, but it may now be placed on record also from Peru: Manfina, on the upper Río Nanay, June, 1929, *Williams 1132*. La Victoria, Dept. Loreto, *Williams 3094*. Santa Rosa, below Yurimaguas, 135 m., *Killip & Smith 28986*.

Lasiacis procerrima (Hack.) Hitchc. *Proc. Biol. Soc. Washington* 24: 145. 1911. *Panicum procerrimum* Hack. *Oesterr. Bot. Zeitschr.* 51: 431. 1901.

Hitchcock in his account of the grasses of Central America (*Contr. U. S. Nat. Herb.* 24: 664. 1930) states that this species ranges from Mexico to Venezuela. The following specimens, therefore, represent a great extension of range: Peru: Tarapoto, Dept. San Martín, in forest, December, 1929, *Williams 6081, 6611*.

Leptochloa virgata (L.) Beauv. Ess. Agrost. 166. 1812. *Cynosurus virgatus* L. Syst. Nat. ed. 10. 2: 87. 1759.

An addition to the flora of Peru (Department of Loreto): La Victoria, *Williams* 2892. Paraíso, Alto Itaya, *Williams* 3221.

Leptochloa scabra Nees, Agrost. Bras. 435. 1829.

This species, also, is not recorded for Peru, but it is represented by the following collection: Department of Loreto: Leticia, September 4, 1929, *Williams* 3066.

Leptochloa filiformis (Lam.) Beauv. Ess. Agrost. 166. 1812. *Festuca filiformis* Lam. Tabl. Encycl. 1: 191. 1791.

This species, likewise, may be recorded from Peru on the basis of recent collections: Department of Loreto: Huallaga, Yurimaguas, at edge of forest or in abandoned land, November, 1929, *Williams* 4645, 4646, 4643. Vernacular name, "nudillo."

Olyra surinamensis Hochst. ex Steud. Syn. Pl. Glum. 1: 36. 1854.

The species has been recorded heretofore only from the Guianas. The following collection, therefore, represents a notable extension of range: Peru: Timbuchi, on the Río Nanay, Dept. Loreto, in water in forest, June, 1929, *Williams* 1043.

Oryza latifolia Desv. Journ. de Bot. Desv. 1: 77. 1813.

Although a common grass in many parts of the tropical American lowlands, where it grows usually in shallow water, this has not been reported from Peru. The following recent collections are available: Peru (Department of Loreto): La Victoria, edge of forest, September, 1929, *Williams* 3093. Río Masana, May, 1929, *Williams* 2. Iquitos, March, 1930, *Williams* 8087. Vernacular name, "gramalote."

This is a native American grass, but it is remarkable how very close it is in all characters to cultivated rice, *Oryza sativa*. The latter is said to be an annual, and *O. latifolia* a perennial. The duration of the plant usually can not be determined from herbarium specimens, and the other characters seem to be decidedly indefinite, so much so that the best authorities upon grasses make evident mistakes in determining herbarium specimens of the two supposed species.

Panicum cyanescens Nees, Agrost. Bras. 220. 1829.

The species is not listed by Hitchcock for the central Andes, but it may now be reported from Peru: San Roque, Dept. San Martín, 1,400 m., January and February, 1930, *Williams* 7671, 7435.

Panicum fasciculatum Sw. Prodr. Veg. Ind. Occ. 22. 1788.

A common weedy grass, widely dispersed in tropical America, but new for Peru: On the Tablazo, north of Pariñas Valley, Dept. Piura, March, 1929, *Oscar Haught F135*.

Panicum megiston Schult. Mant. 2: 248. 1824.

Reported from Ecuador and Bolivia, but not from Peru. The following collections are at hand: Peru (Department of Loreto): Caballo-Cocha, on the Amazon, August, 1929, *Williams 2466*. La Victoria, on the Amazon, in forest, August, 1929, *Williams 2824*.

Panicum quadriglume (Doell) Hitchc. Contr. U. S. Nat. Herb. 24: 460. 1927. *P. cayennense* var. *quadriglume* Doell in Mart. Fl. Bras. 2: 220. 1877.

Reported previously from Bolivia, but not known elsewhere in the central Andes. The following collection may be recorded: Peru: Tarapoto, Dept. San Martín, edge of path, 750 m., December, 1929, *Williams 5800*.

Panicum pilosum Sw. Prodr. Veg. Ind. Occ. 22. 1788.

A common weedy grass of tropical America, but not listed heretofore from Peru: Yurimaguas, Dept. Junín, 135 m., Aug.-Sept., 1929, *Killip & Smith 28207*. Palta-Cocha, upper Río Nanay, Dept. Loreto, July, 1929, *Williams 1268*. Lower Río Nanay, May, 1929, *Williams 382*. Timbuchi, Río Nanay, Dept. Loreto, June, 1929, *Williams 861*. San Roque, Dept. San Martín, 1,400 m., *Williams 7287*. Vernacular name, "tarro-urcu."

Panicum pantrichum Hack. Verh. Zool. Bot. Ges. Wien 1915: 72. 1915.

Reported already from Bolivia and Ecuador, this may be recorded now from Peru: Tarapoto, Dept. San Martín, 750 m., December, 1929, *Williams 5877*.

Paspalum minus Fourn. Mex. Pl. 2: 6. 1886.

The species was not listed by Hitchcock from the central Andes, but it has been reported since from Bolivia. It may be recorded also from Peru: Iquitos, Dept. Loreto, 100 m., in waste places, August, 1929, *Killip & Smith 26906*.

Paspalum repens Berg. Act. Helv. Phys. Math. 7: 129. pl. 7. 1772.

Recorded from Ecuador, but not elsewhere in the central Andes. The following specimens are from Peru (Department of Loreto): Lower Río Nanay, in water, May, 1929, *Williams 509*. Pebas, July, 1929, *Williams 1856*. Vernacular name, "gramalote."

Paspalum prostratum Scribn. & Merr. U. S. Dept. Agr. Div. Agrost. Bull. 24: 9. 1900.

A Mexican species, recorded from Bolivia. The following collection shows that its range includes Peru: Pampalca, between Huanta and Río Apurímac, Dept. Ayacucho, 3,200 m., open hillside, May, 1929, *Killip & Smith 22215*.

Paspalum microstachyum Presl, Rel. Haenk. 1: 215. 1830.

Listed from Ecuador, but new for the flora of Peru: Huallaga, Yurimaguas, Dept. Loreto, a weed in abandoned land, November, 1929, *Williams 4636*.

Paspalum notatum Flüge, Monogr. Pasp. 106. 1810.

For some reason this species was not listed from Peru, although the following collection was available when Hitchcock's *Grasses of Ecuador, Peru, and Bolivia* was published: Huánuco, 2,100 m., forming tough clumps along ditch, April, 1923, *Macbride 3519*.

Paspalum plicatulum Michx. Fl. Bor. Amer. 1: 45. 1803.

A recently collected addition to the flora of Peru: Aina, between Huanta and Río Apurímac, Dept. Ayacucho, 750–1,000 m., in clearing, *Killip & Smith 22604*.

Pharus latifolius L. Syst. Nat. ed. 10. 2: 1269. 1759.

The species is not listed from Peru, but the following material is representative: Department of Loreto: Puerto Arturo, Yurimaguas, in forest, *Williams 5140*. Mishuyacu, near Iquitos, in forest, *Klug 214*. Vernacular name, "paufil chaqui."

Sporobolus argutus (Nees) Kunth, Enum. Pl. 1: 215. 1833. *Vilfa arguta* Nees, Agrost. Bras. 395. 1829.

Since it had been collected in both Ecuador and Bolivia, this grass was to be expected in Peru, but it was not obtained there until recently: Paríñas Valley, Dept. Piura, April, 1929, *Haught F90*. Near the Amotape Hills, especially around La Búa, December, 1928, *Haught F90*.

Sporobolus purpurascens (Sw.) Hamilt. Prodr. Ind. Occ. 5. 1825. *Agrostis purpurascens* Sw. Prodr. Veg. Ind. Occ. 25. 1788.

Reported in the central Andes from Ecuador, and occurring also in Peru: San Roque, Dept. San Martín, 1,400 m., in pasture, January, 1930, *Williams* 7533.

Trichachne insularis (L.) Nees. Agrost. Bras. 86. 1829.
Andropogon insularis L. Syst. Nat. ed. 10. 2: 1304. 1759.

One of the common weedy grasses of lowland tropical America, but not recorded from Peru. The following specimen has been obtained recently: Department of San Martín: In pasture, Tarapoto, 750 m., December, 1929, *Williams* 5599.

Digitaria horizontalis Willd. Enum. Pl. 92. 1809.

This, also, is a common tropical weed, but it has not been listed previously from this country: Peru: In clearing, Santa Rosa, Dept. Loreto, 135 m., September, 1929, *Killip & Smith* 28867.

Andropogon bicornis L.—One of the common grasses of Central America, frequenting habitats such as are common in British Honduras, this well-known species is not recorded from that country in Hitchcock's recent account of the grasses of Central America (Contr. U. S. Nat. Herb. 24, pt. 9. 1930). The following collection, therefore, deserves to be placed on record: British Honduras: All Pines, at sea level, common in open places, September, 1930, *W. A. Schipp* 654.

Phragmites communis Trin.—The common reed is not listed for British Honduras by Hitchcock in *The Grasses of Central America*, although naturally so widely distributed a grass would be expected there. The following collection is in the herbarium of Field Museum: Stann Creek, in mangrove swamp, common, December, 1929, *W. A. Schipp* 511.

Stenotaphrum secundatum (Walt.) Kuntze.—This grass, likewise, may be reported as a member of the flora of British Honduras: Stann Creek, open places, December, 1929, *W. A. Schipp* 501.

MORACEAE

Pourouma aspera Trécul.—Although a common tree in many places along the Atlantic coast of Central America, this relative of the Cecropias is not known to reach Mexico. Apparently a northern record for it is established by a recent collection: British Honduras: Maya Mounds, near the Cockscomb Mountains, 150 m., June, 1930, *W. A. Schipp* S127; a tree 12 m. high, in forest, the trunk 25 cm. in diameter; common; fruits black; known locally as "trumpet."

NYCTAGINACEAE

Recent study of the South American plants referred to the genus *Mirabilis* convinces the writer that it is necessary to combine in a single genus the plants that in the United States have been referred to *Mirabilis*, *Oxybaphus*, *Hesperonia*, *Quamoclidion*, and *Allioniella*. If only the species native in the United States are considered, these groups seem to possess characters that separate them satisfactorily. When, however, the South American, and especially the Peruvian species are taken into account, the supposedly distinctive generic characters break down. No one of the characters, such as the number of flowers in the involucre, form of the fruit, or shape of the perianth, seems to be constantly associated with other distinctive characters throughout the range of the group. If the genus *Mirabilis* is divided, the nine species occurring in Peru, in spite of the fact that they evidently are closely related, would fall into four genera, clearly an unreasonable and illogical division.

It is, in a way, unfortunate that the genus *Oxybaphus*, almost always kept distinct by North American botanists, must be merged with *Mirabilis*, typified by the common garden four-o'clock, but if all the species of the group are considered, the only distinguishing character for *Oxybaphus* is the smaller size of the flowers, scarcely a character of generic importance, even if it is quite as significant as leaflet size. Although size of leaflets or of flowers has been used as a generic character in some recent taxonomic papers, it is scarcely to be commended as a criterion of generic relationship!

The following list gives the correct nomenclature for the North American species of *Mirabilis*, the order being that of the *North American Flora* (21: 217-40. 1918).

Mirabilis viscosa Cav. Icon. 1: 13. 1791. *Oxybaphus viscosus* L'Hér. ex Choisy in DC. Prodr. 13²: 430. 1849. *Allionia viscosa* Kuntze, Rev. Gen. 533. 1891.

Mirabilis corymbosa Cav. Icon. 4: 55. 1797. *Allionia corymbosa* Kuntze, Rev. Gen. 533. 1891.

Mirabilis microchlamydea (Standl.), comb. nov. *Allionia microchlamydea* Standl. Contr. U. S. Nat. Herb. 13: 405. 1911.

Mirabilis glabra (Wats.), comb. nov. *Oxybaphus glaber* Wats. Amer. Nat. 7: 301. 1873. *Allionia glabra* Kuntze, Rev. Gen. 533. 1891.

Mirabilis glabra var. *recedens* (Weatherby), comb. nov. *Oxybaphus glaber* var. *recedens* Weatherby, Proc. Amer. Acad. 45: 425. 1910.

Mirabilis exaltata (Standl.), comb. nov. *Allionia exaltata* Standl. Contr. U. S. Nat. Herb. 12: 355. 1909. *Oxybaphus exaltatus* Weatherby, Proc. Amer. Acad. 49: 492. 1913.

Mirabilis Carletoni (Standl.), comb. nov. *Allionia Carletoni* Standl. Contr. U. S. Nat. Herb. 12: 355. 1909. *Oxybaphus Carletoni* Weatherby, Proc. Amer. Acad. 49: 492. 1913.

Mirabilis coccinea (Torr.) B. & H. Gen. Pl. 3: 3. 1880. *Oxybaphus coccineus* Torr. Bot. Mex. Bound. Surv. 169. 1859. *Allionia coccinea* Standl. Contr. U. S. Nat. Herb. 12: 339. 1909.

Mirabilis gausapoides (Standl.), comb. nov. *Allionia gausapoides* Standl. Contr. U. S. Nat. Herb. 13: 406. 1911.

Mirabilis linearis (Pursh) Heimerl, Ann. Cons. Jard. Genève 5: 186. 1901. *Allionia linearis* Pursh, Fl. Amer. Sept. 728. 1814. *Oxybaphus linearis* Robinson, Rhodora 10: 31. 1908.

Mirabilis decipiens (Standl.), comb. nov. *Allionia decipiens* Standl. N. Amer. Fl. 21: 223. 1918.

Mirabilis hirsuta (Pursh) MacM. Metasp. Minn. Vall. 217. 1892. *Allionia hirsuta* Pursh, Fl. Amer. Sept. 728. 1814. *Oxybaphus hirsutus* Sweet, Hort. Brit. 1: 334. 1826.

Mirabilis pauciflora (Buckl.), comb. nov. *Oxybaphus pauciflorus* Buckl. Proc. Acad. Phila. 1862: 7. 1862. *Allionia pauciflora* Standl. N. Amer. Fl. 21: 224. 1918.

Mirabilis albida (Walt.) Heimerl, Ann. Cons. Jard. Genève 5: 182. 1901. *Allionia albida* Walt. Fl. Carol. 84. 1788. *Oxybaphus albidus* Sweet, Hort. Brit. 2: 429. 1827.

Mirabilis lanceolata (Rydb.), comb. nov. *Allionia lanceolata* Rydb. Bull. Torrey Club 29: 691. 1902.

Mirabilis aggregata (Ortega) Cav. Icon. 5: 22. 1799. *Calyx-hymenia aggregata* Ortega, Decad. 81. 1798. *Oxybaphus aggregatus* Vahl, Enum. Pl. 2: 41. 1806. *Allionia aggregata* Spreng. Syst. Veg. 1: 384. 1825.

Mirabilis coahuilensis (Standl.), comb. nov. *Allionia coahuilensis* Standl. Contr. U. S. Nat. Herb. 12: 347. 1909. *Oxybaphus coahuilensis* Weatherby, Proc. Amer. Acad. 45: 425. 1910.

Mirabilis pumila (Standl.), comb. nov. *Allionia pumila* Standl. Contr. U. S. Nat. Herb. 12: 345. 1909.

Mirabilis rotundifolia (Greene), comb. nov. *Allionia rotundifolia* Greene, Pl. Baker. 3: 33. 1901.

Mirabilis nyctaginea (Michx.) MacM. Metasp. Minn. Vall. 217. 1892. *Allionia nyctaginea* Michx. Fl. Bor. Amer. 1: 100. 1803. *Oxybaphus nyctagineus* Sweet, Hort. Brit. 1: 334. 1826.

Mirabilis Grayana (Standl.), comb. nov. *Allionia Grayana* Standl. N. Amer. Fl. 21: 227. 1918.

Mirabilis suffruticosa (Standl.), comb. nov. *Allionia suffruticosa* Standl. Contr. U. S. Nat. Herb. 13: 408. 1911.

Mirabilis comata (Small), comb. nov. *Allionia comata* Small, Fl. Southeast. U. S. 407. 1903. *Oxybaphus comatus* Weatherby, Proc. Amer. Acad. 49: 492. 1913.

Mirabilis longipes (Standl.), comb. nov. *Allionia longipes* Standl. N. Amer. Fl. 21: 229. 1918.

Mirabilis ciliata (Standl.), comb. nov. *Allionia ciliata* Standl. Contr. U. S. Nat. Herb. 12: 345. 1909. *Oxybaphus ciliatifolius* Weatherby, Proc. Amer. Acad. 49: 492. 1913.

Mirabilis violacea (L.) Heimerl, Beitr. Syst. Nyctag. 23. 1897. *Allionia violacea* L. Syst. Nat. ed. 10. 890. 1759. *Oxybaphus violaceus* Choisy in DC. Prodr. 13²: 432. 1849.

Mirabilis oxybaphoides Gray in Torr. Bot. Mex. Bound. Surv. 173. 1859. *Quamoclidion oxybaphoides* Gray, Amer. Journ. Sci. II. 15: 320. 1853. *Allioniella oxybaphoides* Rydb. Bull. Torrey Club 29: 687. 1902.

Mirabilis triflora Benth. Pl. Hartw. 23. 1839. *Quamoclidion triflorum* Standl. Contr. U. S. Nat. Herb. 12: 358. 1909.

Mirabilis Greenei Wats. Proc. Amer. Acad. 12: 253. 1876. *Quamoclidion Greenei* Standl. Contr. U. S. Nat. Herb. 12: 358. 1909.

Mirabilis Froebelii (Behr) Greene, Bull. Calif. Acad. 1: 124. 1885. *Oxybaphus Froebelii* Behr, Proc. Calif. Acad. 1: 69. 1855. *Quamoclidion Froebelii* Standl. Contr. U. S. Nat. Herb. 12: 359. 1909.

Mirabilis multiflora (Torr.) Gray in Torr. Bot. Mex. Bound. 173. 1859. *Oxybaphus multiflorus* Torr. Ann. Lyc. N. Y. 2: 237. 1827. *Quamoclidion multiflorum* Torr. ex Gray, Amer. Journ. Sci. II. 15: 321. 1853.

Mirabilis Heimerlii (Standl.) Macbr. Contr. Gray Herb. 56: 24. 1918. *Hesperonia Heimerlii* Standl. Contr. U. S. Nat. Herb. 13: 412. 1911.

Mirabilis oligantha (Standl.), comb. nov. *Hesperonia oligantha* Standl. Contr. U. S. Nat. Herb. 12: 363. 1909.

Mirabilis polyphylla (Standl.), comb. nov. *Hesperonia polyphylla* Standl. Contr. U. S. Nat. Herb. 12: 364. 1909.

Mirabilis tenuiloba Wats. Proc. Amer. Acad. 17: 375. 1882. *Hesperonia tenuiloba* Standl. Contr. U. S. Nat. Herb. 12: 363. 1909.

Mirabilis laevis Benth. Bot. Voy. Sulph. 44. 1844. *Hesperonia laevis* Standl. Contr. U. S. Nat. Herb. 12: 363. 1909.

Mirabilis cedrosensis (Standl.) Jepson, Fl. Calif. 459. 1914.
Hesperonia cedrosensis Standl. Contr. U. S. Nat. Herb. 12: 362. 1909.

Mirabilis Bigelovii Gray, Proc. Amer. Acad. 21: 413. 1886.
Hesperonia Bigelovii Standl. N. Amer. Fl. 21: 235. 1918.

Mirabilis californica Gray in Torr. Bot. Mex. Bound. Surv. 173. 1859. *Hesperonia californica* Standl. Contr. U. S. Nat. Herb. 12: 364. 1909.

Mirabilis retrorsa Heller, Muhlenbergia 2: 193. 1906. *Hesperonia retrorsa* Standl. N. Amer. Fl. 21: 236. 1918.

Mirabilis Watsoniana Heimerl, Bot. Jahrb. 11: 84. 1889.

Mirabilis exserta Brandeg. Proc. Calif. Acad. II. 3: 165. 1891.

Mirabilis Pringlei Weatherby, Proc. Amer. Acad. 45: 424. 1910.

Mirabilis Urbani Heimerl, Oesterr. Bot. Zeitschr. 56: 250. 1906.

Mirabilis Jalapa L. Sp. Pl. 177. 1753.

Mirabilis longiflora L. Svensk. Vet. Akad. Handl. 1755: 176. 1755.

Mirabilis Wrightiana Gray ex Britton & Kearney, Trans. N. Y. Acad. Sci. 14: 28. 1894.

The following species of *Allionia*, described since the appearance of the part of the *North American Flora* dealing with the family Nyctaginaceae, also should be transferred to *Mirabilis*:

Mirabilis grandiflora (Standl.), comb. nov. *Allionia grandiflora* Standl. Journ. Washington Acad. Sci. 13: 5. 1923.

Torrubia myrtiflora, sp. nov.---Ramuli crassiusculi fusci glabrati vel sparsissime pilis minutis induti; folia opposita vel ternata chartacea in sicco fusca petiolata, petiolo gracili 12-20 mm. longo glabro; lamina lanceolato-oblonga vel anguste elliptico-oblonga 9-13 cm. longa 3.5-5 cm. lata subabrupte breviterque acuminata, acumine anguste triangulari obtuso, basi acuta vel breviter acuminata et plus minusve obliqua, glabra, supra sublucida, costa venisque obscuris, subtus brunnescens, costa gracili prominente, nervis lateralibus utroque latere 8-10 gracillimis prominulis angulo lato divergentibus subarcuatis vel fere rectis remote a margine obscure conjunctis, nervulis obsoletis; inflorescentia mascula terminalis 8.5-12 cm. longe pedunculata cymoso-paniculata 4-6 cm. longa et 7-10 cm. lata laxa vel dense multiflora basi radiatim ramosa pedunculo ut rami sparse vel subdense ferrugineo-puberulo, floribus dense aggregatis sessilibus vel brevissime pedicellatis, bracteolis ovato-lanceolatis vix 0.5 mm. longis dense tomentulosis; perianthium obconicum 4-4.5 mm. longum basi acutum dense rufo-tomentulosum 2 mm. latum, lobis minutis

late ovatis obtusis vix 0.5 mm. longis; stamina c. 9 longissime exserta periantho plus quam duplo longiora.—Peru: Puerto Arturo, Yurimaguas, Dept. Loreto, edge of forest, alt. about 200 m., November 18, 1929, *Llewelyn Williams 5162* (Herb. Field Mus. No. 614,336, type).

The genus has not been recorded previously from Peru. The plant can not be referred to any of the several species reported from the Amazon Valley. The vernacular name is given as "clavo-caspi."

Torrubia Broadwayana (Heimerl), comb. nov. *Pisonia Broadwayana* Heimerl, Repert. Sp. Nov. 17: 1. 1921.

Torrubia obtusiloba (Huber), comb. nov. *Pisonia obtusiloba* Huber, Bol. Mus. Goeldi 5: 347. 1909.

Torrubia Riedeliana (Fisch.), comb. nov. *Pisonia Riedeliana* Fisch. Vid. Medd. 1890: 162. 1891.

Torrubia Warmingii (Heimerl), comb. nov. *Pisonia Warmingii* Heimerl, Vid. Medd. 1890: 162. 1891.

Bougainvillea pachyphylla Heimerl in herb., sp. nov.—Frutex vel arbor parva erecta vel interdum scandens; ramulis pallidis ochraceis, novellis dense puberulis, spinis numerosis puberulis usque ad 9 mm. longis rectis vel subrecurvis armatis; folia subcoriacea, petiolo gracili 4–11 mm. longo dense puberulo; lamina late ovata vel deltoideo-ovata, interdum late elliptica, 3–6 cm. longa, 2–5 cm. lata, sensim vel abrupte acuta vel acuminata, interdum apicem obtusiusculum versus sensim angustata, supra dense viscido-puberula, subtus dense breviterque viscido-villosula, rare glabrata; inflorescentiae triflorae in axillis laxae cymosae, ramis gracillimis dense tomentellis, pedunculis gracillimis 7–12 mm. longis dense tomentellis; bracteae roseae late elliptico-ovatae vel suborbiculares plerumque 2–2.5 cm. longae et fere aequilatae, basi late rotundatae vel leviter cordatae, apice obtusae vel late rotundatae, utrinque sparse puberulae vel villosulae vel serius glabratae; perianthium 9–11 mm. longum anguste tubulosum dense viscido-hirtulum vel puberulum infra limbum breviter 5-lobum paullo constrictum.—Peru: Dept. Piura, *Raimondi 8703* (type in herb. Berol., photo. in herb. Field Mus.). Frias, Dept. Piura, *Weberbauer 6432* (fragm. from herb. Berol. in herb. Field Mus.). Amotape Hills, Prov. Paíta, *Haught F24* (herb. Field Mus.), 24 (U. S. Nat. Herb.).

The material cited represents a plant closely related to *B. peruviana* H. & B., and perhaps not definitely separable from it, but it has been indicated in the herbarium as a distinct species by Dr. Heimerl, and for the present seems worthy of specific rank. *B. peruviana* is distinguished chiefly by the glabrous perianth and much thinner leaves.

Regarding *B. pachyphylla*, which is called "papelillo" locally, Mr. Haught supplies the following information:

Ordinarily a shrub or small tree of upright growth, this plant sometimes is a woody twiner, unless there are two species. These specimens were taken from a climbing plant growing in a watercourse near La Brea. Not very abundant, but well distributed through the Amotape Hills. I have never seen plants of this species growing elsewhere. Growing as a shrub 4-10 feet high, the plants are common at the top of Cerro Muerte, five miles from La Brea. The bracts of the inflorescence are of a soft pink or rose color, but the color varies in different specimens. When in bloom, a plant is very conspicuous—entirely covered with bracts.

Bougainvillea spinosa (Cav.) Heimerl in E. & P. Nat. Pfl. 3: Abth. 1b: 27. 1889. *Tricycla spinosa* Cav. Anal. Cienc. Nat. 5: 63. pl. 40. 1802.

This species, one of the few well-marked ones of the genus, has been known heretofore only from southern Argentina, but there may now be reported the following collection: Peru: Torata, Prov. Moquehua, 2,300 m., *Weberbauer 7414*. The occurrence of the plant in Peru, many hundreds of miles from the nearest Argentine station, is remarkable, to say the least. Careful examination of the Peruvian material reveals no differentiating characters by which it may be distinguished from Argentine specimens.

Neea Williamsii, sp. nov. Frutex, ramulis gracillimis viridibus satis dense pilosis vel hirtellis, internodiis valde elongatis usque ad 12 cm. longis; folia opposita maxime inaequalia breviter petiolata, petiolo gracili 8-9 mm. longo dense piloso; lamina foliorum majorum late elliptico-oblonga c. 17 cm. longa et 7.5-8 cm. lata apice abrupte breviterque acuminata, acumine anguste triangulari acuto 1-1.5 cm. longo, basi valde obliqua et obtusa vel acutiuscula, crasse membranacea, in sicco laete viridis, supra lucida, tantum ad costam prominentem hirta, venis nervulisque valde prominulis et reticulatis, subtus fere concolor, ubique sparse pilis longiusculis pallidis patentibus pilosa, costa gracili elevata, nervis lateralibus utroque latere c. 13 gracilibus prominulis angulo fere recto divergentibus rectis vel leviter arcuatis remote a margine conjunctis, nervulis paullo prominulis laxissime reticulatis; lamina foliorum minorum suborbicularis vel late elliptica 1.5-2.5 cm. longa; inflorescentia femina ut videtur pendula gracillime 13-16 cm. longe pedunculata cymosopaniculata late pyramidalis c. 6 cm. longa et 5.5-9 cm. lata laxepauciflora, ramis basalibus verticillatis patentibus dense pilosis, pedunculo sparse piloso, floribus aggregatis sessilibus vel breviter pedicellatis, bracteolis lineari-subulatis 1.5-2 mm. longis rufo-tomentellis; perianthium immaturum 3 mm. longum ovoideo-oblongum acutiusculum sparse rufo-puberulum. Peru: Tarapoto, Dept. San Martín, alt. 360-900 m., December 21, 1909, *Llewelyn Williams 6567* (Herb. Field Mus. No. 614,446, type).

In general appearance this resembles *N. laxa* Poepp. & Endl., of the same region, but in that the leaves are glabrous. It must be related, likewise, to *N. oppositifolia* R. & P., of which I have seen no material, but the original plate of that species shows a plant with relatively broader leaves, and a much denser inflorescence on a comparatively short peduncle.

Allionia cristata (Standl.), comb. nov. *Wedelia cristata* Standl. Contr. U. S. Nat. Herb. 12: 331. 1909. *Wedeliella cristata* Cockerell, Torreya 9: 167. 1909.

Allionia Choisyi, nom. nov. *A. incarnata* L. var. *glabra* Choisy in DC. Prodr. 13²: 435. 1849, non *A. glabra* Kuntze, 1891. *Wedelia glabra* Standl. Contr. U. S. Nat. Herb. 12: 332. 1909. *Wedeliella glabra* Cockerell, Torreya 9: 167. 1909.

RANUNCULACEAE

Anemone multifida (Greene), comb. nov. *Pulsatilla multiceps* Greene, Erythea 1: 4. 1893.

NYMPHAEACEAE

Technically the generic name *Nymphozanthus* is, apparently, the proper one for the yellow pondlilies, but there is every reason for expecting that in the end common sense will prevail, and the name *Nuphar*, so long applied to the group, whether it is specially conserved or not, will be the one employed by most botanists. The name *Nuphar*, incidentally, may be used with equal propriety by those few American botanists who still cling to the so-called "American Code," since the application of the generic name *Nymphaea* to this group, rather than to the showy-flowered waterlilies, is a mere matter of quibbling.

The following species, published under *Nymphaea*, are here placed under the generic name to which it is believed they should be referred:

Nuphar fraternum (Miller & Standl.), comb. nov. *Nymphaea fraterna* Miller & Standl. Contr. U. S. Nat. Herb. 16: 82. 1912.

Nuphar advena Ait., var. **erthyraeum** (Miller & Standl.), comb. nov. *Nymphaea advena* subsp. *erythraea* Miller & Standl. Contr. U. S. Nat. Herb. 16: 91. 1912.

Nuphar ozarkanum (Miller & Standl.), comb. nov. *Nymphaea ozarkana* Miller & Standl. Contr. U. S. Nat. Herb. 16: 91. 1912.

Nuphar ludovicianum (Miller & Standl.), comb. nov. *Nymphaea ludoviciana* Miller & Standl. Contr. U. S. Nat. Herb. 16: 92. 1912.

Nuphar fluviatile (Harper), comb. nov. *Nymphaea fluviatilis* Harper, Bull. Torrey Club 33: 234. 1906.

Nuphar chartaceum (Miller & Standl.), comb. nov. *Nymphaea chartacea* Miller & Standl. Contr. U. S. Nat. Herb. 16: 94. 1912.

Nuphar ulvaceum (Miller & Standl.), comb. nov. *Nymphaea ulvacea* Miller & Standl. Contr. U. S. Nat. Herb. 16: 97. 1912.

Nuphar ovatum (Miller & Standl.), comb. nov. *Nymphaea ovata* Miller & Standl. Contr. U. S. Nat. Herb. 16: 97. 1912.

Nuphar puberulum (Miller & Standl.), comb. nov. *Nymphaea puberula* Miller & Standl. Contr. U. S. Nat. Herb. 16: 99. 1912.

Nuphar microcarpum (Miller & Standl.), comb. nov. *Nymphaea microcarpa* Miller & Standl. Contr. U. S. Nat. Herb. 16: 100. 1912.

Nuphar orbiculatum (Small), comb. nov. *Nymphaea orbiculata* Small, Bull. Torrey Club 23: 128. 1896.

Nuphar bombycinum (Miller & Standl.), comb. nov. *Nymphaea bombycina* Miller & Standl. Contr. U. S. Nat. Herb. 16: 102. 1912.

MENISPERMACEAE

Hyperbaena Winzerlingii Standl. Trop. Woods 9: 10. 1927.

A second collection may now be reported for this species: Honey Camp, Orange Walk, British Honduras, November, 1928, *C. L. Lundell* 92. The collector describes the plant as a large bushy tree. The very slender inflorescences are shorter than the leaves and hirtellous with short ascending hairs. The leaves of fertile branches are mostly 4-7 cm. long, and occasionally some of them are entire.

Annona scleroderma Safford, Journ. Washington Acad. Sci. 3: 105. f. 1. 1913.

The species was described from Cahabón, in the mountains of Alta Verapaz, Guatemala, and is reported doubtfully from Oaxaca in Mexico. The following collection establishes its occurrence in British Honduras: In forest near the Cockscomb Mountains, 150 m., June, 1930, *Schipp* S110; a tree 10.5 m. high, the trunk 24 cm. in diameter; flowers greenish yellow; fruit reddish; occasional.

CRUCIFERAE

Nasturtium clavatum (Rydb.), comb. nov. *Roripa clavata* Rydb. Bull. Torrey Club 29: 235. 1902. *Radicula clavata* Macoun, Ottawa Nat. 20: 142. 1906.

Nasturtium Williamsii (Britton), comb. nov. *Roripa Williamsii* Britton, Bull. N. Y. Bot. Gard. 2: 171. 1901. *Radicula Williamsii* Heller, Muhlenbergia 7: 124. 1912.

DROSERACEAE

Drosera intermedia Hayne. —Among the most interesting of all the many unusual plants discovered in British Honduras by W. A. Schipp is a *Drosera*, representing a family new to the Central American flora. Since so many other Cuban plants have been found in the pine woods of this region, the occurrence of this genus here is not surprising, although scarcely to be predicted. The record is as follows: British Honduras: All Pines, open places, common, at sea level, July, 1930, W. A. Schipp 539; flowers white or shell-pink. Although no ripe capsules are present to provide seeds for examination, the specimens appear to be referable to this species.

SAXIFRAGACEAE

Saxifraga adscendens L.—Although this species has been known to occur in British Columbia, it has not been recorded as a member of the Alaskan flora. It may now be reported from Alaska, as follows: Glacier Bay, Station 6, William S. Cooper.

LEGUMINOSAE

Calliandra papillosa (Britt. & Rose), comb. nov. *Anneslia papillosa* Britt. & Rose, N. Amer. Fl. 23: 63. 1928.

Calliandra belizensis (Britt. & Rose), comb. nov. *Anneslia belizensis* Britt. & Rose in Standl. Trop. Woods 11: 19. 1927.

A second collection of this well-marked species has been received from British Honduras: Honey Camp, December, 1928, C. L. Lundell 148.

Calliandra chapaderoana (Britt. & Rose), comb. nov. *Anneslia chapaderoana* Britt. & Rose, N. Amer. Fl. 23: 69. 1928.

Calliandra salvadorensis (Britt. & Rose), comb. nov. *Anneslia salvadorensis* Britt. & Rose, N. Amer. Fl. 23: 68. 1928.

Calliandra izalcoensis (Britt. & Rose), comb. nov. *Anneslia izalcoensis* Britt. & Rose, N. Amer. Fl. 23: 69. 1928.

Calliandra Juzepczukii, sp. nov.—Frutex, ramulis crassis teretibus ferrugineis dense albo-pilosis; stipulae herbaceae vel subinduratae latissime ovatae 3.5 mm. longae acutae vel apiculatae sparse minute pilosulae persistentes; folia petiolata, petiolo 1–1.5 cm. longo dense albo-piloso, pinnis 4–6-jugis 3.5–6.5 cm. longis, rhachi dense albo-pilosa; foliola 20–45-juga oblonga recta vel paullo sursum curva c. 4.5 mm. longa et 1.5 mm. lata falcato-acuta et apiculata crasse coriacea, supra lucida, glabra, subtus paullo pallidiora, sparse strigillosa vel glabrata; flores capitati, capitulis paucifloris solitariis vel geminatis in racemos terminales rigidos c. 16 cm. longos dispositis, pedunculis crassis c. 1 cm. longis densissime breviterque albo-pilosulis, floribus arcte sessilibus, bracteis latissime ovatis obtusis vel acutiusculis usque ad 5 mm. longis extus dense adpresso-pilosulis; calyx latissime campanulatus 4–4.5 mm. longus, 8 mm. latus, extus dense albo-sericeus breviter 5-lobus, lobis latissime triangularibus obtusissimis; corolla extus dense albo-sericea 12–14 mm. longa fere ad basin 5-loba, lobis oblongo-ovatis acutis 4.5 mm. latis; stamina numerosissima, filamentis gracillimis purpureis c. 4 cm. longis.—Mexico: Arriaga, Chiapas, January 7, 1926, *S. Juzepczuk 1382* (Herb. Field Mus. No. 621,426, type; duplicate in Leningrad Herb.).

Apparently this Chiapas plant is closest to *Calliandra Palmeri* Wats., described from Jalisco and known also from the state of Nayarit. That differs in having about 15 pairs of pinnae to the leaf, larger leaflets, and longer stamens.

Bauhinia hondurensis, sp. nov. Frutex scandens cirrifer inermis, ramulis gracilibus teretibus ferrugineis vel brunneis, novellis dense minute pilosulis; folia alterna longe petiolata subcoriacea, petiolo gracillimo 2–8 cm. longo pilis brunnescentibus patentibus vel subadpressis piloso; lamina ad medium vel profundius biloba 3.5–10.5 cm. longa 3.5–8 cm. lata, basi cordata vel subcordata, sinu aperto, lobis late semiovatis acutis vel obtusis versus apicem angustatis, 4-nerviis, supra sublucidis, glabris, nervis prominulis, nervulis prominulis arctissime reticulatis, subtus paullo pallidioribus, sparse vel subdense pilis gracillimis patentibus vel subadpressis pilosis, ad nervos densius pilosis, nervis gracilibus prominentibus, nervulis prominulis arctissime reticulatis; flores racemosi, racemis subpaniculatis pedunculatis 3–4 cm. longis laxe paucifloris vel multifloris, pedicellis gracilibus 6–10 mm. longis minute pilosulis, bracteis lineari-attenuatis 4–5 mm. longis, bracteolis paullo infra medium pedicelli insertis lineari-subulatis 3–4 mm. longis; calyx ante anthesin fere clausus 10-nerviis sparse sericeus, tubo 6 mm. longo basi rotundato late campanulato, lobis lineari-attenuatis 3–3.5 mm. longis inaequalibus; petala c. 2 cm. longa apice obtusa vel rotundata suberecta libera basin versus longe attenuata, extus sparse ad unguem densius pilis longis subadpressis brunnescentibus pilosa; stamina perfecta 10. calyce breviora, antheris minutis; legumen oblongum versus apicem paullo latius c. 7.5 cm. longum et 2.5 cm. latum, tenuiter adpresso-pilosum, c. 5-spermum.—Honduras: A woody vine overhanging the

river, Lancetilla, June-July, 1929, A. M. Chickering 152 (Herb. Field Mus. No. 622,373, type). San Pedro Sula, Dept. Santa Bárbara, 240 m., October, 1887, Thieme 5184. La Ceiba, December, 1927, Holger Johansen 3.

One of the collections has been referred to *Bauhinia cumanensis* HBK. *B. hondurensis* is a relative of *B. glabra* Jacq., which was described from Colombia and is reported from Yucatan. The latter is distinguished at a glance by the short, rounded lobes of the leaves and by its much more abundant pubescence.

Schizolobium parahybum (Vell.) Blake.—This fine yellow-flowered tree was not known from Mexico at the time of preparation of the manuscript for the *Trees and Shrubs of Mexico* (Contr. U. S. Nat. Herb. 23). The genus was recorded from Mexico in 1925 (Samuel J. Record, *Schizolobium: A Promising Source of Pulpwood*. Trop. Woods 2: 2-5). The report was based upon a specimen of the wood obtained somewhere in southern Mexico. The species may now be reported definitely from the country upon the basis of a recent collection: Palo Dulce, Veracruz, March 1, 1930, C. D. Mell 679. The collector reports the vernacular name as "judío."

Sophora tomentosa L.—In the West Indies *Sophora tomentosa* seems to be a common shrub of seashores, but in Mexico, so far as collections indicate, it is decidedly rare, and in Central America it is reported only from Colón, collected many years ago by Hayes, but not found there by recent collectors. A new station may be put on record, as follows: British Honduras: All Pines, in broken coral behind mangrove swamps, rare, September, 1930, W. A. Schipp 609; a shrub 3 m. high with yellow flowers.

Parosela Thompsonae Vail, Bull. Torrey Club 24: 18. 1897.

This species is not listed by Tidestrom in his *Flora of Utah and Nevada*, and apparently it has been known only from northern Arizona. The following collection, therefore, represents a new state record: Utah: East side of Mount Ellen, Henry Mountains, Garfield County, July 5, 1930, W. D. Stanton 338. The specimen was communicated by Professor A. O. Garrett.

Petalostemon oligophyllus (Torr.) Rydb. Mem. N. Y. Bot. Gard. 1: 237. 1900. *P. gracilis* var. *oligophyllus* Torr. in Emory, Mil. Recon. 139. 1848.

This widespread western species, strangely enough, is not reported from Utah by Tidestrom in his flora of that State. There may be recorded the following Utah collections: Moab, June, 1927, W. P. Cottam 2158; Bluff, July, 1927, Cottam 2556.

Eriosema pinetorum, sp. nov.—Herba perennis, caulibus pluribus e radice incrassata erectis c. 20 cm. altis gracilibus rigidis viridibus sparse puberulis et pilis fulvis adscendentibus rigidiusculis longiusculis hirsutis dense foliatis; folia alterna sessilia vel 2 mm. tantum longe petiolata; stipulae brunneae lineari-attenuatae 14 mm. longae striatae puberulae et sparse hirsutae; foliola linearia subcoriacea 5-10.5 cm. longa 5-8 mm. lata versus apicem mucronato-apiculatum acutiusculum sensim angustata basi obtusa, supra viridia, glabra vel sparse scaberrula, costa gracillima prominula, nervulis vix prominulis arcte reticulatis, subtus fere concolor, ad costam marginesque sparse adpresso-hirsuta, costa gracili elevata, nervis lateralibus numerosis brevibus arcuatis angulo semirecto adscendentibus, nervulis prominulo-reticulatis; racemi axillares c. 1.5 cm. longe pedunculati capituliformes pauciflori, pedunculo gracili sparse hirsuto, pedicellis 1-2 mm. longis; calyx c. 6.5 mm. longus sparse pilis brunnescentibus vel fulvis hirsutus, tubo campanulato 1.5-2 mm. longo, lobis paullo inaequalibus e basi lineari-lanceolata longe setiformi-productis erectis; petala lutea, vexillo 8 mm. longo extus sparse hirtello vel puberulo obovato-oblongo, alis angustis glabris basin versus longe attenuatis vexillo fere aequilongis. British Honduras: All Pines, in open places, at sea level, common, August 20, 1930, *William A. Schipp* 584 (Herb. Field Mus. No. 621,945, type).

In general appearance as well as in technical details this plant resembles *Eriosema diffusum* (HBK.) Don, a common plant of the pine forests of Central America. That species differs constantly in its much broader leaves, shorter stipules, and more abundant, appressed, silky pubescence.

Centrosema angustifolia (HBK.) Benth.—A recent collection makes it possible to report this handsome small vine from British Honduras: All Pines, at sea level, growing in open places, August, 1930, *W. A. Schipp* 579; a vine 2 m. long; flowers reddish purple; common.

EUPHORBIACEAE

Hiernonyma oblonga (Tul.) Muell. Arg. Heretofore this tree has been known in Mexico from Puebla and Oaxaca, without any further stations until the Guianas were reached. The following collection indicates it as an addition to the flora of Central America: British Honduras: Sittee River, at sea level, in secondary forest, August, 1930, *W. A. Schipp* 592; a tree 10.5 m. high, the trunk 24 cm. in diameter; rare; flowers white; wood white.

AQUIFOLIACEAE

Ilex Liebmannii, sp. nov.—Frutex vel arbor, ramulis gracilibus plus minusve angulatis, vetustioribus cinereis, junioribus fusco-ferrugineis, minutissime puberulis, internodiis brevibus; folia alterna

longiuscule petiolata, petiolo gracili 6–8 mm. longo minutissime puberulo vel fere glabro; lamina tenuiter coriacea lanceolata vel elliptico-lanceolata 4.5–5 cm. longa, 1–2 cm. lata, subabrupte longaeque acuminata, acumine angusto longe attenuato subintegro, basi acutiuscula vel obtusa, in toto margine aequaliter adpresse spinuloso-serrata, supra in sicco fusca lucida, tantum ad costam prominulam minute puberula, nervis subimpressis, subtus glabra, paullo pallidior, costa gracili elevata, nervis lateralibus utroque latere c. 10 gracilibus prominentibus angulo latiusculo abeuntibus fere rectis, nervulis paucis prominulis laxè reticulatis; inflorescentiae feminae in axillis solitariae umbellatim 2–3-florae graciliter 4–13 mm. longe pedunculatae, pedunculis ut pedicelli graciles 3–6 mm. longi glabris; calyx 2–2.5 mm. latus glaber breviter 4-lobus, lobis late rotundatis; bacca glabra subglobosa 3.5 mm. longa basi et apice rotundata, nuculis 4.—Mexico: Petlapa, Veracruz, in 1841–43, *Liebmann 14927* (Herb. Field Mus. No. 614,053, type; duplicate in Copenhagen herb.). Amatlán, July, 1842, *Liebmann 14926* (F, Copenhagen).

A relative of *Ilex mexicana* (Turcz.) Black, which also occurs in the state of Veracruz, but that species has larger leaves, 6.5–9 cm. long, of different outline, and larger fruits.

CELASTRACEAE

Glossopetalon spinescens Gray, var. **melonandrum** (Koehne) Trel. in Gray, Syn. Fl. 1: 401. 1897. *G. meionandrum* Koehne, Gartenflora 43: 237. f. 52. 1894.

Utah: Price, Carbon Co., April, 1930, *S. Flowers Fg41–30*; flowering material. Same locality, May, 1930, *Flowers Fg32–30*; fruiting specimens.

This variety has not been reported previously from Utah. By Rydberg the form is maintained as a distinct species. In *G. spinescens* the stamens are normally 10, while in var. *meionandrum* they vary from 5 to 7, or in some flowers the number is even greater. Since the plants are so much alike in all other respects, *G. meionandrum* hardly seems worthy of more than varietal rank.

Celastrus Liebmannii, sp. nov.—Frutex scandens omnino glaber, ramulis gracilibus subteretibus fusco-ferrugineis lenticellis numerosis parvis pallidis elevatis dense conspersis, internodiis plerumque elongatis; folia alterna, petiolo gracili vel crassiusculo 5–8 mm. longo; lamina elliptico-oblonga vel elliptica, 6–10 cm. longa, 2.5–5 cm. lata, acuta vel abrupte acuta, interdum acuminata, basi acuta vel obtusa, remote et adpresse crenato-serrata, subcoriacea, fere concolor; paniculae axillares solitariae laxè pauci- vel multiflorae interdum racemiformes, foliis breviores vel interdum folia aequantes, bracteis minutis triangularibus vel subulatis, pedicellis 1–4 mm. longis; flores c. 2 mm. lati, sepalis late rotundatis denticulatis vel integris, petalis brevibus apice late rotundatis; stamina petalis

paullo longiora; stylus crassus 0.7 mm. longus.—Mexico: Mirador, Veracruz, February, 1842, *Liebmann 14871* (Herb. Field Mus. No. 614,044, type; duplicate in Copenhagen herb.); March, 1842, *Liebmann 14875b* (F, Copenhagen); *Liebmann 14875*, *14875a*, *14872*, *14873*. Zacuapan, Veracruz, March, 1914, *Purpus 7094*. Thickets of hills near Jalapa, Veracruz, April, 1899, *Pringle 8133*.

The fruit of this plant, unfortunately, is not known. The only other plant certainly referable to *Celastrus* and reported from Mexico is *C. Pringlei* Rose, which is conspicuously different in leaf characters.

HIPPOCRATEACEAE

Hippocratea yucatanensis Standl. Field Mus. Bot. 8: 19. 1930.

Described from Yucatan, it is natural that this species should occur in adjacent Central America, and it is represented by the following collection from British Honduras: Mullins River Road, in swampy places, flowers white, *W. A. Schipp 119*.

THEACEAE

Eurya lancifolia, sp. nov.—Arbor 15-metralis, trunco 30 cm. diam., ramulis gracilibus teretibus fusco-ferrugineis, novellis pilis brevibus adscendentibus gracilibus rigidiusculis pilosulis, internodiis brevibus; folia alterna crasse membranacea breviter petiolata, petiolo crassiusculo c. 15 mm. longo adpresso-pilosulo; lamina anguste lanceolata-oblonga 11–14 cm. longa 2.8–4.3 cm. lata longe sensimque acuminata basi rotundata, creberrime crenato-serrulata, supra obscure olivacea, ad costam prominentem dense pilosula, aliter glabra, venis inconspicuis, subtus pallidior, ubique sparse, ad costam densius pilis lutescentibus brevibus et longioribus intermixtis subpatentibus pilosula, costa gracili elevata, nervis lateralibus utroque latere c. 20 gracilibus prominentibus angulo latiusculo adscendentibus arcuatis prope marginem conjunctis, nervulis prominulis laxe reticulatis; flores in axillis vel ad nodos defoliatos fasciculati pauci vel numerosi, pedicellis in statu fructifero 4–5 mm. longis crassiusculis dense minute pilosulis, bracteolis rotundatis sepalis duplo brevioribus; sepala rotundata 3.5 mm. longa apice late rotundata extus dense fulvo-sericea intus glabra; bacca nigra subglobosa glabra 7 mm. longa stylo persistente conico 1 mm. longo apiculata.—British Honduras: Middlesex, in mountain forest, alt. 120 m., November 15, 1929, *William A. Schipp 455* (Herb. Field Mus. No. 606,831, type).

Eurya guatemalensis Donn. Smith differs in having the lower surface of the leaves covered with a very dense and coarse, brownish tomentum. In *E. Seemanniana* Pittier, of Panama, the leaves are densely sericeous beneath and acute at the base.

FLACOURTIACEAE

Abatia mexicana, sp. nov.—Ramuli graciles subteretes, primo dense stellato-tomentosi, cito glabrati; folia opposita, petiolo gracili 6–9 mm. longo dense stellato-tomentoso; lamina crasse membranacea anguste ovata vel lanceolato-oblonga, 4–5 cm. longa, 1.5–2 cm. lata, longe sensimque acuminata, basi late rotundata, subobscure crenato-serrata, utrinque sparse stellato-pilosa; racemi 1–3 cm. longe pedunculati, multiflori, 5–6 cm. longi, rhachi gracili dense stellato-tomentosa, pedicellis c. 2 mm. longis, bracteis brevibus lanceolato-subulatis; alabastra late ovoidea 2.5–3 mm. longa acuta densissime tomento fulvo stellato-tomentosa; sepala 4 patentia vel subreflexa late ovata 2.5 mm. longa acuta intus puberula; ovarium dense stellato-pilosum. —Mexico: Mirador, Veracruz, in 1841–43, *Liebmann 15030* (Herb. Field Mus. No. 614,054, type; duplicate in Copenhagen herb.).

The genus has not been reported previously for the Mexican flora, so far as I am aware. The South American *Abatia parviflora* R. & P. grows in the mountains of Costa Rica, and that has been believed to be the northern limit in distribution of the genus. *A. parviflora* differs from the Mexican plant in its very much larger flowers.

Xylosma celastrinum (HBK.), comb. nov. *Flacourtia celastrina* HBK. Nov. Gen. & Sp. 7: 239. 1825. *Myrozylon celastrinum* Kuntze, Rev. Gen. 1: 44. 1891.

MYRTACEAE

Psidium rotundifolium, sp. nov.—Frutex 60 cm. altus, ramis subteretibus crassiusculis obscure brunneis, novellis obtuse trigonis dense minute pilosulis, internodiis usque ad 5.5 cm. longis; folia opposita vel subopposita brevissime petiolata coriacea, petiolo crasso 3–5 mm. tantum longo dense et minutissime pilosulo; lamina orbicularis vel rotundato-elliptica 10.5–12.5 cm. longa 8.5–10.5 cm. lata, apice late rotundata et saepe brevissime emarginata, basi late rotundata vel leviter cordata, utrinque punctis minutis nigris sparsis conspersa, supra sublucida, ad costam puberula vel fere glabra, costa venisque manifestis sed vix elevatis, subtus fere concolor, ad costam crassam elevatam sparse pilosula, aliter glabra vel glabrata, nervis lateralibus utroque latere c. 7 angulo lato adscendentibus prominentibus gracilibus subarcuatis remote a margine conjunctis, nervulis reticulatis; inflorescentiae axillares c. triflorae foliis duplo breviores, pedunculo c. 2 cm. longo dense minute pilosulo pedicellis brevissimis; bacca (immatura?) ovalis c. 2.5 cm. longa et 2 cm. lata basi et apice rotundata sparse puberula vel glabrata apice calyce subpersistente coronata lutea; calyx ut videtur fere aequaliter 5-lobus, lobis late ovali-oblongis c. 5 mm. longis apice rotundatis intus dense puberulis. —British Honduras: All Pines, in open places, at sea level, September 5, 1930, *William A. Schupp S85* (Herb. Field Mus. No. 621,914, type).

The collector states that the fruit has a tart flavor, and that the flowers (none are present on the single specimen seen) are white.

In its unusually large leaves, rounded and nearly as broad as long, this plant is strikingly unlike any other species known heretofore from Central America, or from the West Indies. The discovery of a single new species of *Psidium* or guava in Central America would have been a surprise, but the discovery in a single locality of four is astonishing. They are a further proof, if one were necessary, of the need for additional collecting in British Honduras.

***Psidium chrysobalanoides*, sp. nov.**—Frutex 60 cm. altus, ramis acute quadrangulatis ferrugineo-brunneis ad angulos anguste alatis, novellis sparse minute sericeis mox glabratiss, internodiis foliis paullo brevioribus; folia opposita coriacea in sicco luteo-viridia fere sessilia, petiolo crasso c. 2 mm. longo; lamina obovata vel late elliptico-obovata, rare obovato-rotundata, 4.5–7 cm. longa, 3–4.5 cm. lata, apice rotundata vel late rotundata et abrupte breviterque producta, acumine latissime triangulari obtuso pallido-marginato, basi cuneata vel obtusa, utrinque dense puncticulata, supra sublucida, sparse minute sericea vel fere glabra, costa venisque prominentibus et arcte reticulatis, subtus paullo pallidior, densiuscule pilis minutis pallidis adpressis sericea, costa crassa elevata, nervis lateralibus utroque latere c. 6 angulo acutissimo valde adscendentibus fere rectis vel leviter curvis prominentibus gracilibus prope marginem conjunctis, nervulis prominulis arcte reticulatis, margine pallido vel stramineo et paullo incrassato; cymae axillares triflorae vel uniflorae 1.5 cm. longe pedunculatae, flore centrali sessili, lateralibus 1 cm. longe pedicellatis, pedunculo obtuse quadrangulato et pedicellis crassiusculis glabratiss; bacca immatura globoso-obovoidea c. 1 cm. longa basin versus paullo angustata sparse puberula vel fere glabra calyce persistente coronata; calyx c. 5 mm. longus profunde 5-lobus, lobis valde inaequalibus latis apice subtruncatis intus sericeis.—British Honduras: All Pines, in open places, at sea level, August 25, 1930, William A. Schipp 596 (Herb. Field Mus. No. 621,925, type).

The collector reports that the fruit of this guava is tart and good for making jelly. The flowers are described as white, but none are present on the specimens.

Psidium chrysobalanoides differs conspicuously from *P. rotundifolium* in its small, narrower, nearly sessile leaves and different pubescence.

***Psidium Schippii*, sp. nov.**—Frutex 60 cm. altus, ramis subteretibus brunneis rimosiss et sparse lenticellatis, novellis dense pilis brevibus pallidis subpatentibus pilosulis, internodiis foliis plus quam duplo brevioribus; folia opposita vel subopposita crasse coriacea breviter petiolata, petiolo crasso 3–8 mm. longo pilosulo; lamina obovata vel oblongo-obovata 11–12 cm. longa 4.5–6 cm. lata obtusa

vel interdum rotundata et obscure apiculata, basin versus sensim angustata, basi ipsa acuta vel subobtusata, supra luteo-viridis, sub-lucida, primo sparse pilosula sed mox glabrata, venis ut costa vix prominulis arcte reticulatis, subtus paullo pallidior, ubique satis dense pilis debilibus albis subpatentibus pilosula, serius glabrata, costa crassa elevata, nervis lateralibus utroque latere c. 6 angulo acuto adscendentibus elevatis leviter curvis vel fere rectis crassiusculis juxta marginem conjunctis, nervulis prominentibus arctissime reticulatis; cymae ad nodos defoliatos infra folia insertae triflorae 3.5 cm. longe pedunculatae, flore centrali sessili, lateralibus crasse 8 mm. longe pedicellatis; baccae immaturae ovali-globosae c. 2 cm. longae et fere aequilatae densiuscule pilosulae vel glabratae basi et apice rotundatae calyce persistente coronatae; calyx c. 5 mm. longus profunde et inaequaliter lobatus, lobis intus prope apicem sericeis.—British Honduras: All Pines, in open places, at sea level, August 25, 1930, *William A. Schipp* 595 (Herb. Field Mus. No. 621,991, type).

The flowers (none are present on the specimens) are described as white, and the fruit as yellow and of tart flavor.

At first I was inclined to regard this plant as only a variety of *P. chrysobalanoides*, but it seems worthy of specific rank, differing from that species in its long and narrow leaves, with distinctive pubescence.

***Psidium hypoglaucum*, sp. nov.**—Frutex 60 cm. altus, ramis acute quadrangulatis pallide cinnamomeis ad angulos angustissimis alatis densissimis pilis albidis adscendentibus pilosulis, internodiis 2.5–3 cm. longis; folia opposita coriacea breviter petiolata, petiolo crasso 3–5 mm. longo dense albido-pilosulo; lamina elliptico-obovata vel fere elliptica 6–8.5 cm. longa, 4–5 cm. lata, apice rotundata vel obtusissima et apiculata, acumine acuto, basi cuneata vel subobtusata, utrinque dense puncticulata, supra densiuscule pilis albidis debilibus pilosula, lucidula, venis prominulis arcte reticulatis, subtus grisea, ubique dense griseo-tomentosa, costa crassiuscula elevata, nervis lateralibus utroque latere c. 9 angulo semirecto adscendentibus gracilibus elevatis regularibus fere rectis vel leviter curvis juxta marginem conjunctis, nervulis tomento fere occultis; pedunculi (unus tantum visus) validi 3.5 cm. longi uniflori dense albido-pilosuli axillares; bacca globosa c. 1.8 cm. longa basi et apice rotundata albido-pilosula calyce persistente coronata; calyx c. 6 mm. longus profunde et irregulariter lobatus.—British Honduras: All Pines, in open places, at sea level, September 7, 1930, *William A. Schipp* S99 (Herb. Field Mus. No. 621,957, type).

“Flowers white; fruit yellow; very rare.”

From the other species described here, this differs conspicuously in the abundant pale tomentum of the leaves, and in their numerous veins.

***Eugenia flavifolia*, sp. nov.**—Arbor 7.5 m. alta, trunco 10 cm. diam., ramulis gracilibus rigidis albidis, novellis ochraceis vel cin-

namomeis minutissime puberulis vel glabratis, internodiis plerumque 1.5–3 cm. longis; folia opposita breviter petiolata subcoriacea, petiolo gracili 4–6 mm. longo minutissime puberulo vel glabrato; lamina elliptico-oblonga vel oblongo-ovata 6–8 cm. longa 2–3.5 cm. lata, obtusa vel acutiuscula, apice obtuso, basi acuta, supra lucida, pallide luteo-viridis, epunctata, tantum ad costam minute puberula vel fere glabra, venis prominulis, subtus paullo pallidior, luteo-viridis, minute nigro-puncticulata, glabra, costa gracili elevata, nervis lateralibus utroque latere c. 8 gracilibus prominulis angulo latiusculo adscendentibus inaequalibus fere rectis prope marginem conjunctis, nervulis prominulis reticulatis; flores racemosi, racemis axillaribus solitariis plerumque 4–8-floris, rhachi usque ad 5 mm. longa, pedicellis 2–6 mm. longis rigidiusculis minutissime puberulis vel glabratis, bracteolis 2 late rotundatis c. 1 mm. longis minutissime puberulis et ciliolatis; calycis tubus obovoideus glaber 1 mm. longus, sepalis 4 rotundatis 1.5 mm. longis glabris in statu fructifero usque ad 2 mm. latis punctatis; petala alba rotundato-obovata apice rotundata vel obtusissima 3.5 mm. longa puncticulata; bacca depresso-globosa 5–6 mm. lata dense punctata rubra basi et apice late rotundata, apice calyce persistente coronata; semen 1.—British Honduras: Stann Creek Railway, in swampy places, alt. 15 m., November 14, 1929, *William A. Schipp* 450 (Herb. Field Mus. No. 606,830, type); in open forest, swampy places, November 12, 1929, *Schipp* 438.

The collector states that the tree is common, and that the flowers have a strong perfume.

CORNACEAE

Cornus disciflora DC., var. *floccosa* (Wang.), comb. nov.
C. floccosa Wang. Repert. Sp. Nov. 6: 101. 1908.

Although the plant described as *Cornus floccosa* seems distinct enough in its extreme state, there are intermediate specimens which show that it can not well be maintained as a distinct species. It does appear, however, to be worthy of varietal rank.

MYRSINACEAE

Stylogyne ramiflora (Oerst.) Mez.—Only a single species, *Stylogyne laevis* (Oerst.) Mez, of this genus has been known heretofore from Mexico, but a recent collection permits the record of *S. ramiflora* from the country: Chiapas: Ríoarriba, December, 1925, *S. Juzepczuk* 1289.

Rapanea guianensis Aubl.—This well-known shrub or small tree ranges widely, being known in Mexico from Chiapas, and occurring in Florida, the West Indies, and South America, but until now it has not been discovered in Central America. The following

collection is at hand: British Honduras: All Pines, edge of mangrove swamp, August, 1930, *W. A. Schipp 536*; a tree 9 m. high with a trunk 12.5 cm. in diameter; fruits black.

PRIMULACEAE

Lysimachia mexicana Knuth in Engl. Pflanzenreich IV. 237: 308. 1905.

This species, so briefly characterized by its author, was based upon *Galeotti 7228* from the mountains of Oaxaca, Mexico. Another collection has been seen by the present writer: El Pelado, Oaxaca, August, 1843, *Liebmann* (F, Copenhagen).

SAPOTACEAE

Bumelia cuneata Sw.—Besides the many recent additions to the Central American Sapotaceae, there may now be recorded this species from British Honduras: All Pines, growing among mangroves, August, 1930, *W. A. Schipp 585*; a tree 6 m. high, the trunk 10 cm. in diameter, rare; fruits small and black.

APOCYNACEAE

Cameraria belizensis Standl. Trop. Woods 7: 8. 1926.

From British Honduras there may be reported another collection of this interesting tree: Honey Camp, Orange Walk, September, 1928, *C. L. Lundell XXV*. The vernacular name is given as "chechém de caballo."

CONVOLVULACEAE

Ipomoea digitata L.—In spite of the fact that it is widely distributed in tropical America, and apparently common in some regions, the present species probably has not been known before from Central America, unless under some other specific name. The following collection is from British Honduras: Sittee River, on river bank, at sea level, September, 1930, *W. A. Schipp 636*; a vine 6 m. long; corolla rose-pink; occasional.

Lysiostyles sericea, sp. nov.—Frutex alte scandens, ramulis gracilibus teretibus, novellis viridescentibus dense minute sericeis, internodiis elongatis; folia petiolata alterna crasse papyracea, petiolo gracili 1.5–3.5 cm. longo dense sericeo; lamina elliptico-oblonga vel elliptico-ovata 7–13 cm. longa 3.5–6.5 cm. lata, apice obtusa vel acuta et breviter apiculata vel interdum breviter et subito acuminata, basi leviter cordata usque ad acuta, supra in sicco cinereo-viridis, glabra,

venis non elevatis, subtus densissime sericea et lucida, costa gracili elevata, nervis lateralibus utroque latere c. 9 angulo acuto adscendentibus gracillimis prominulis fere rectis; inflorescentiae axillares solitariae breviter pedunculatae racemiformes multiflorae petiolis multo breviores, in statu fructifero plus minusve elongatae, pedicellis crassiusculis dense sericeis plerumque 3–4 mm. longis, post anthesin paullo elongatis; sepala aequalia suborbicularia 4 mm. longa apice rotundata vel obtusissima et obscure apiculata extus dense sericea intus glabra; corolla (in alabastro tantum visa) extus dense sericea fere ad basin 5-fida, lobis triangularibus acutis; stamina ut videtur exserta ad faucem affixa, antheris oblongis; capsula subglobosa c. 13 mm. longa glabra apice breviter apiculata 3–4-valvis, seminibus 3–4 magnis glabris.—Honduras: Lancetilla Valley, Dept. Atlántida, June–July, 1929, A. M. Chickering 130 (Herb. Field Mus. No. 622,386, type). Lancetilla Valley, in wet thicket, alt. about 20 m., 1927–28, Standley 55233, 56577.

The generic position of the shrub here described is decidedly uncertain, but the plant seems to be placed more satisfactorily in *Lysiostyles* than in any of the other described genera of the Convolvulaceae. The fruit is unusual for any group of the family. It is a dry capsule with thick, woody, and more or less elastic valves, which at maturity split into numerous longitudinal valves that resemble barrel staves and remain attached to one another. The seeds are covered with a copious orange-red fleshy coating. When fresh, the fruits strongly suggest those of the North American bittersweet (*Celastrus*). The plant seemed to be a rare one, for I saw only a few individuals about Lancetilla. They were large woody vines, climbing to the tops of small trees.

BORAGINACEAE

Bourreria oxyphylla Standl. Trop. Woods 16: 40. 1928.

New collections may be reported for this species, as follows:

British Honduras: Hillbank, July 12, 1928, C. S. Brown 21; a tree 12–19 m. high, the trunk 45 cm. in diameter. Honey Camp, Orange Walk, C. L. Lundell 117; vernacular name, "laurel."

VERBENACEAE

Tamonea curassavica (L.) Pers.—Although rather widely distributed in eastern Mexico, and occurring as far south as Yucatan, this plant is not recorded, apparently, as a member of the Central American flora. The following collection may be reported: British Honduras: In low scrub, All Pines, at sea level, September, 1930, W. A. Schipp 612; a plant a meter high with blue flowers and black fruit.

Citharexylum hirtellum Standl. Field Mus. Bot. 4: 257. 1929.

A second collection of this species may now be reported from British Honduras: Freshwater Creek, September 6, 1928, *J. B. Kinloch* 2. The specimens are in flower.

SOLANACEAE

Eutheta, gen. nov.—Herbae ramosae ut videtur erectae, hispidae, ramulis obtuse tetragonis; folia opposita vel superiora alterna, simplicia, dentata; flores majusculi solitarii axillares pedunculati albi, pedunculo supra medium foliaceo-bibracteolato; calyx campanulatus magnus 10-costatus viridis breviter 5-dentatus, dentibus triangularibus, fructifer auctus vesiculososo-inflatus, 5-angulatus, capsulam includens; corolla infundibuliformi-campanulata magna, limbo plicato 5-lobo, lobis late rotundatis; filamenta supra tubum brevem corollae inserta, brevia, basi vix dilatata, antheris medio affixis ovatis apiculatis, loculis in longitudinem dehiscentibus; ovarium globosum 2-loculare, stylo gracili elongato, stigmatibus brevibus oblongis, ovulis numerosissimis; capsula globoso-ovoidea calyce inflato inclusa, acuminata, 2-locularis loculicide bivalvis; semina numerosissima densissime conferta clavato-acicularia, testa pallida spongiosa, embryone tereti recto fere centrali.

Type species, *Cacabus hondurensis* Donn. Smith.

There are at hand several Mexican collections of a curious solanaceous plant which is evidently identical with one described from Honduras by Captain John Donnell Smith under the name *Cacabus hondurensis*. The plant, if one may judge from habit and general appearance alone, is anomalous in the genus *Cacabus*. The flowers and calyx are much like those of the genera *Cacabus* and *Physalis*, and apparently they do not afford characters which would justify the separation of the plant as a new generic type.

Fruits of *Cacabus hondurensis* have not been available until the present time, but they are now supplied by a specimen collected in 1841 at Mirador, Mexico, by Liebmann. Examination of these fruits shows that it is impossible to refer the plant to *Cacabus*, or to the genus *Physalis*, although the latter group does contain some rather anomalous species. The fruit of *Cacabus hondurensis*, as shown by these Mexican specimens, is clearly a capsule rather than a berry, but most remarkable are the seeds, which are unlike any that I have seen elsewhere in the family. They are very numerous and closely packed, acicular in form, tapering slightly toward the base, and they have a pale translucent testa at about the middle of which there appears the darker embryo.

Evidently the plant must be treated as a distinct genus, for which the name *Eutheta* is here proposed:

Eutheta hondurensis (Donn. Smith), comb. nov. *Cacabus hondurensis* Donn. Smith, Bot. Gaz. 56: 60. 1913.

The following specimens have been seen: Honduras: Llano de la Puerta near Copán, alt. 900 m., January 8, 1907, *H. Pittier 1828* (U. S. Nat. Herb., type).—Mexico: Totutla, August, 1841, *Liebmann 15455* (F, Copenhagen). Dos Puentes, August, 1841, *Liebmann 15456* (F, Copenhagen). Mirador, Veracruz, November, 1841, *Liebmann 15457* (F, Copenhagen). Hacienda Coahuayula, Michoacán, November, 1906, *G. M. Emrick 95* (F); vernacular name, "tomatillo."

Melananthus guatemalensis (Benth.) Solereder.—This curious plant was described from Guatemala, and was collected recently in Honduras by the present writer (Field Mus. Bot. 4: 323. 1929). The genus and species may now be reported for the flora of Mexico: Consoquitla, August, 1841, *Liebmann "Hypericaceae 38"* (Herb. Copenhagen; fragm. in herb. Field Mus.).

SCROPHULARIACEAE

Lagotis minor (Willd.), comb. nov. *Gymnandra minor* Willd. Ges. Naturf. Freund. Berlin Mag. 5: 393. pl. 9, f. 3. 1811.

Lagotis reniformis (Willd.), comb. nov. *Gymnandra reniformis* Willd. Ges. Naturf. Freund. Berlin Mag. 5: 396. pl. 10, f. 9. 1811.

Russelia campechiana Standl. Contr. U. S. Nat. Herb. 23: 1309. 1924.

Known previously only from Campeche, this well-marked species may now be reported from British Honduras: Honey Camp, October, 1929, *C. L. Lundell 576*. The specimens are in fruit only.

OROBANCHACEAE

Boschniakia rossica (C. & S.), comb. nov. *Orobanche rossica* C. & S. Linnaea 3: 132. 1828. *B. glabra* C. A. Mey. ex Bong. Mém. Acad. St. Pétersb. VI. 2: 159. 1832.

RUBIACEAE

Cephalanthus glabratus (Spreng.) Schum. in Mart. Fl. Bras. 6: 128. 1889. *Buddleia glabrata* Spreng. Syst. Veg. 1: 431. 1825.

Although this species is described and illustrated by Schumann in the *Flora Brasiliensis*, no specimens are cited from Brazil. Probably it has been recorded previously from Brazil, but, at any rate, it is worth while to place on record the following collection from that country: Rio Grande do Sul: Quinta prope Rio Grande, in silvis fruticetisque plus minusve humidis, in 1892, *Malme 404* (Herb. Stockholm).

Uncaria guianensis (Aubl.) Gmel. Syst. Veg. 1: 370. 1796.
Oourouparia guianensis Aubl. Pl. Guian. 177. pl. 168. 1775.

Brazil: Santa Cruz da Barra, Matto Grosso, in dumetis ripae fluvii Paraguay, March, 1894, C. A. M. Lindman A3155 (Herb. Stockholm).

Alseis involuta Schum. in Mart. Fl. Bras. 6^o: 189. 1889.

Brazil: Catinga bei Calderão, State of Bahia, October, 1906, *Ule 7268* (Herb. Kew.). The species is easily recognized by its subcapitate rather than elongate-spicate inflorescence. It seems to be of rare occurrence.

Manettia minutiflora, sp. nov.—Scandens, caulibus gracilibus teretibus fuscis dense minuteque retrorso-pilosulis, internodiis elongatis; stipulae brevissimae connatae, vagina truncata puberula breviter apiculata et setuloso-ciliata; folia petiolata opposita crasse membranacea, petiolo 5–7 mm. longo dense minute pilosulo; lamina ovato-oblonga vel anguste elliptico-oblonga 4–7.5 cm. longa 1.5–3 cm. lata longe acuminata, acumine angusto attenuato, basi acuta vel acutiuscula, supra in sicco fusca, sparse et minutissime hispidula, venis vix prominulis, subtus fere concolor, lucidula, densiuscule et minute pilosula, costa gracili elevata, nervis lateralibus utroque latere c. 4 angulo acuto adscendentibus gracillimis prominulis arcuatis remote a margine conjunctis, nervulis prominulis arctissime reticulatis; flores minuti in cymas vel paniculas parvas paucifloras laxas axillares et terminales dispositi, bracteis parvis, pedicellis crassis plerumque 3–5 mm. longis rectis dense pilosulis; hypanthium anguste obovoideum 2 mm. longum basi acutiusculum dense pilosulum; calyx 4-partitus, lobis 4 late ovatis vel rotundatis c. 2 mm. longis et plerumque aequilatis patentibus vel recurvis apice rotundatis usque ad acutis, dense puberulis, marginibus vulgo revolutis; corolla hypocrateriformis extus glabra, tubo crasso 3–4 mm. longo intus supra basin villosa, fauce non barbato, lobis 4 late ovatis vel subrotundatis 2–2.5 mm. longis patentibus apice rotundatis intus ad margines breviter villosulis aliter glabris; antherae inclusae; stylus gracilis glaber breviter exsertus; capsula immatura oblongo-ellipsoidea 6 mm. longa, 4 mm. lata, sparse puberula, basi subrotundata, calyce persistente coronata.—Brazil: State of Minas Geraes, 1816–21, *Auguste de Saint-Hilaire 718* (Herb. Paris, type), 980 (Herb. Paris).

In its small flowers and in the form of the corolla, the plant approaches *Manettia alba* (Aubl.) Wernham, of the Guianas, but that species differs in its relatively narrow calyx segments.

Manettia tomantha, sp. nov.—Frutex scandens, caulibus subteretibus vel subangulatis gracilibus olivaceis dense puberulis, internodiis plerumque elongatis; stipulae in vaginam 1.5 mm. longam olivaceam vel pallidam truncatam vel breviter mucronatam puber-

ulam connatae erectae; folia petiolata opposita crasse membranacea, petiolo gracili 5–12 mm. longo dense puberulo; lamina ovata vel ovato-elliptica, interdum rotundato-ovata, 2.5–7 cm. longa, 1.3–3.8 cm. lata, abrupte acuta vel acuminata, interdum longe acuminata, basi rotundata usque ad acuta, interdum abrupte contracta et decurrens, supra olivacea, sublucida, dense puberula vel pilosula, asperula, venis prominentibus et reticulatis, subtus paullo pallidior, densissime puberula vel minute pilosula, mollis, costa gracili elevata, nervis lateralibus utroque latere c. 5 angulo acuto adscendentibus prominentibus gracilibus arcuatis prope marginem conjunctis, nervulis prominulis laxè reticulatis; flores plerumque axillares et solitarii longe pedunculati, pedunculo vulgo 2–4 cm. longo puberulo prope medium bracteis 2 foliaceis magnis usque ad 1.3 cm. longis saepe fere orbicularibus onusto; hypanthium late obovoideum 2.5–3 mm. longum dense puberulum basi acutum; calyx basi in tubum 1 mm. longum connatus extus dense sordido-puberulus, laciniis 4 lineari-attenuatis 3–3.5 mm. longis erectis; corolla tubulosa 6.5–9 mm. longa extus glabra subtruncata vel brevissime lobata, supra paullo dilatato, limbo 3–3.5 mm. lato, tubo intus supra basin densissime albo-villoso; stylus glaber interdum exsertus.—Brazil: Goyaz, April, 1844, *H. A. Weddell 2667* (Herb. Paris, type).

The plant represents a well-marked species, distinguished by the very short corolla lobes and short-tubular calyx. The foliage, also, is characteristic.

***Manettia campanulacea*, sp. nov.** Scandens, caulibus gracilibus viridibus conspicue 4-alatis, alis tenuibus usque ad 1 mm. latis ciliatis, internodiis brevibus vel elongatis; stipulae in vaginam truncatam 2 mm. longam connatae; folia petiolata opposita tenuiter membranacea, petiolo gracillimo 5–13 mm. longo ciliato vel glabrato; lamina ovata vel elliptico-ovata 3–6 cm. longa 1.2–3 cm. lata acuminata vel abrupte acuminata, basi acuta vel late obtusa et subito contracta, supra viridis, prope marginem minute pilosula, aliter glabra, venis manifestis sed vix prominulis, subtus pallidior, glabra, costa gracili vix elevata, nervis lateralibus utroque latere c. 6 angulo acuto adscendentibus gracillimis vix prominulis arcuatis, nervulis obscuris vel obsoletis; flores axillares solitarii, pedicellis gracilibus 1–3 cm. longis ebracteatis glabris; hypanthium anguste clavatum 5 mm. longum versus basin longe attenuatum sparse pilosulum vel glabrum; calyx 4-partitus, laciniis 4 anguste lineari-attenuatis 8–15 mm. longis viridibus sparse ciliolatis adscendentibus; corolla 16 mm. longa tubuloso-infundibuliformis extus praesertim prope basin sparse breviterque villosula, tubo crasso prope basin paullo dilatato, intus supra basin dense villosa, ad medium 2 mm. lato, supra medium sensim dilatato, ore 4 mm. lato, lobis 4 adscendentibus 2.5 mm. longis late ovatis acutiusculis; antherae tubi medium vix superantes oblongae 3 mm. longae.—Brazil: São Gabriel, State of Minas Geraes, 1816–21, *Auguste de Saint-Hilaire* (Herb. Paris, type).

Following Wernham's key to the species of *Manettia*, the present plant runs at once to *M. dominicensis* Wernham, a species of the Lesser Antilles with similar but much shorter calyx lobes.

Manettia verticillata Wernham, Gen. *Manettia* 34. 1919.

Brazil: Itatiaia, in 1918, *P. Campos Porto 15442* (Herb. Berol.).

Manettia paulina, sp. nov.—Frutex scandens, caulibus gracilimis teretibus pallide olivaceis dense minutissime puberulis, internodiis elongatis; stipulae c. 1 mm. longae breviter apiculatae, margine dense glanduloso-denticulato; folia petiolata opposita membranacea, petiolo gracili 5–7 mm. longo puberulo; lamina oblongo-lanceolata vel ovato-oblonga 2.5–6 cm. longa 1–2.5 cm. lata longe sensimque acuminata, acumine acuto, basi obtusa, supra in sicco fusco-viridis, sublucida, minute sparsissime puberula vel fere omnino glabra, venis prominulis, subtus fere concolor, sparse et minutissime puberula vel glabrata, costa gracili elevata, nervis lateralibus utroque latere c. 5 angulo lato adscendentibus prominentibus gracilibus arcuatis prope marginem conjunctis, nervulis prominulis arcte reticulatis, margine plano; flores axillares solitarii longissime pedunculati, pedunculo gracili 1.5–4 cm. longo puberulo prope medium bibracteato, bracteis foliis conformibus plerumque 5–8 mm. longis; hypanthium late obovoideum 2.5 mm. longum basi acutum dense puberulum; calyx 4-partitus, lobis foliaceis viridibus late ovato-triangularibus 3.5–5 mm. longis et fere aequilatis acutis vel obtusiusculis minute puberulis; corolla magna clavata extus sparse puberula c. 4 cm. longa, tubo prope basin 2 mm. lato supra sensim dilatato ore 5–6 mm. lato, lobis 4 late ovato-rotundatis 2–3 mm. longis erectis; antherae pallidae semiexsertae. Brazil: State of São Paulo, 1816–21, *Auguste de Saint-Hilaire 1229* (Herb. Paris, type).

In Wernham's key to the species of *Manettia*, this plant runs to *M. angustifolia* Wernham, a species of Paraguay with much narrower leaves, narrow calyx lobes, and a shorter corolla.

Manettia quinquenervia Sprague, Bull. Herb. Boiss. II. 5: 266. 1905.

The type of this rather well-marked species was collected in the State of Santa Catharina, Brazil, *Fritz Mueller 122*, and no other specimens are cited by Wernham in his account of the genus *Manettia*. The following Brazilian specimens recently examined, all of them in the Stockholm herbarium, seem to be referable to *M. quinquenervia*:

Paraná: Volta Grande, Serra do Mar, in fruticetis, 400 m., *Dusen 9904, 8622*. Serra do Mar, Ypiranga ad marginem viae ferreae, *Dusen 3487*. Ponta Grossa, in fruticetis, 880 m., *Dusen 9911*; in silvula, 880 m., *Dusen 7522*. Jaguariahya, in fruticetis, *Dusen 304a*.—Santa Catharina: Itayahy, ad marginem silvae primaevalis, *Dusen 8401*.

The collections cited show unusual variation in the form of the calyx lobes, which vary from oblong to subulate, but all the specimens appear to be conspecific.

Manettia Burchellii Wernham, Gen. Manettia 18. 1919.

The species was based by Wernham upon a single specimen, *Burchell* 4855 from Rancho do Feliz, Brazil. One additional collection has come to the attention of the writer: Brazil: Province of São Paulo, 1816-21, *Auguste de Saint-Hilaire* 703 (Herb. Paris).

Manettia verticillata Wernham, Gen. Manettia 34. 1919.

Brazil: Prov. Minas Geraes, 1816-21, *Auguste de Saint-Hilaire* 1060 (Herb. Paris).

Manettia parvula Schum. ex Glaziou, Bull. Soc. Bot. France 56: Mém. 3: 336. 1909, nomen; Wernham, Gen. Manettia 26. 1919.

Brazil: Prov. Minas Geraes, 1816-21, *Auguste de Saint-Hilaire* 2466 (Herb. Paris).

Manettia Hoehnei, sp. nov.—Herbacea volubilis, caulibus gracilibus subteretibus fuscis glabris, internodiis plerumque foliis brevioribus, rarius longioribus; stipulae in vaginam subincrassatam glabram c. 1 mm. longam connatae, parte libera aequilonga triangulari-oblonga erecta; folia subcarnosa in sicco tenuiter coriacea mediocria petiolata opposita, petiolo 4-10 mm. longo glabro; lamina ovata, ovato-oblonga vel late ovato-elliptica, 2-5 cm. longa, 1-3.5 cm. lata, acuta vel acuminata, interdum abrupte acuta, basi rotundata vel obtusa, rare acuta, glabra, supra in sicco fusca vel luteo-viridis, venis subimpressis, subtus paullo pallidior, costa gracili prominente, nervis lateralibus utroque latere c. 4 prominulis angulo acuto adscendentibus arcuatis, nervulis occultis, marginibus interdum subrevolutis; inflorescentiae axillares pauciflorae vel rarius multiflorae breviter racemosae vel subumbellatae foliis vulgo breviores, pedicellis crassiusculis plerumque rectis c. 1 cm. longis glabris vel saepe sparse puberulis vel breviter pilosiusculis; hypanthium glabrum vel sparse puberulum 2 mm. longum obovoideum basi acutiusculum; calyx 4-partitus glaber, laciniis c. 2 mm. longis ovatis vel late ovatis obtusis vel acutiusculis patentibus vel subreflexis post anthesin paullo accrescentibus; corolla alba apice rubra extus glabra tubo gracili cylindraceo 8-9 mm. longo 1.2 mm. crasso, lobis 4 suberectis 1.5 mm. longis triangulari-ovatis acutiusculis; capsula subglobosa c. 4 mm. longa et 5 mm. lata glabra tenuiter costata apice truncata vel late truncata, basi abrupte contracta.—Brazil (State of São Paulo): Alto da Serra, March 4, 1918, *F. C. Hoehne* 1599 (Herb. Berol., type). Alto da Serra, April 19, 1918, *Hoehne* 1818 (Herb. Berol.). São Bernardo, August, 1895, *Gustavo Edwall* 11437 (Herv. Comm. Geogr. de S. Paulo No. 3095; herb. Berol.). Serra da Cantareira, 400 m., June, 1913, *Tamandaré & Brade* 7450 (Herb. Berol.).

It is rather strange that a plant apparently so common as this, or at least represented by so many collections, should not have come to the attention of Wernham, when he was preparing his account of the genus *Manettia*. It can not be traced in his key to any Brazilian species with which the specimens may be associated, nor does it agree with any of the described Brazilian species, material of almost all of which is available for comparison.

***Manettia Bradei*, sp. nov.**—Herba volubilis, caulibus gracilimis subteretibus dense pilis brevibus pallidis patentibus vel plerumque reflexis pilosulis, internodiis foliis brevioribus vel longioribus; stipulae minutae in vaginam subtruncatam dense puberulam connatae; folia membranacea breviter petiolata opposita, petiolo gracili 2–3 mm. longo dense albido-pilosulo vel subtomentoso; lamina anguste elliptico-oblonga vel ovato-oblonga 3–6 cm. longa 1–1.8 cm. lata acuta vel breviter acuminata basi acuta, supra asperula viridis dense pilis brevissimis subadpressis pallidis pilosula, subtus paullo pallidior, mollis, dense pilis breviusculis patentibus vel subadpressis pilosula vel fere tomentulosa, costa gracili elevata, nervis lateralibus utroque latere c. 4 angulo angusto adscendentibus subarcuatis prominulis gracilibus, nervulis obscuris; flores axillares solitarii mediores, pedicellis crassiusculis 2–7 mm. longis dense albido-villosulis; hypanthium obovoideum c. 2.5 mm. longum dense albo-tomentosum basi acutiusculum; calyx 4-partitus, laciniis latissime ovatis c. 3 mm. longis et 2.5 mm. latis breviter petiolulatis acutis utrinque dense pilosulis; corolla rubra tubulosa 17 mm. longa 2–2.5 mm. crassa, extus densissime pilis brevibus pluricellularibus villosa, lobis 4 luteis rotundato-ovatis obtusis 2 mm. longis suberectis.—Brazil: São Paulo, Serra da Cantareira, in thickets, December, 1911, *Alex. Curt Brade* 5281 (Herb. Stockholm, type).

A relative of *Manettia Riedelii* Wernham, described from the state of Rio de Janeiro. That species differs in its shorter corolla with larger lobes.

***Manettia pedunculata* (Spreng.) Schum., var. *glabra* Wernham, Gen. *Manettia* 22. 1919.**

The glabrous variety of *M. pedunculata* was based upon a single specimen, *Miers* 3310, from foot of the Gavea, Rio de Janeiro. Two additional collections, one of them from the type locality, may be reported: Brazil: Lower half of the Gavea, Rio de Janeiro, February, 1897, *Ule* 4262 (Herb. Berol.). Itatiaia, 1,050 m., May, 1918, *P. Campos Porto* 15441 (Herb. Berol.).

***Manettia Samuelssoniana*, sp. nov.**—Herbacea volubilis, caulibus gracillimis viridibus subangulatis retrorso-pilosulis et plus minusve puberulis, internodiis saepe foliis longioribus; stipulae persistentes in vaginam pallidam puberulam 1.5 mm. longam con-

natae, parte libera aequilonga ovato-triangulari reflexa acutiuscula apice setuloso-denticulata; folia longe petiolata opposita membranacea, petiolo gracili 8–15 mm. longo pilosulo; lamina ovato-lanceolata vel oblongo-ovata 3–5.5 cm. longa 1–2 cm. lata longe attenuato-acuminata, basi acuta vel saepe abrupte contracta et decurrens, supra laete viridis, sparse puberula vel pilosula, subtus pallidior, ubique satis dense pilis brevibus pallidis subadpressis pilosula, costa gracillima prominula, nervis lateralibus utroque latere 3–4 gracillimis angulo acuto adscendentibus arcuatis; flores solitarii magni, pedicellis gracilibus 2–3.5 cm. longis dense pilis patentibus vel adscendentibus pilosulis; hypanthium late clavatum fere 5 mm. longum basin versus longe attenuatum dense pilosum; calyx ad basin 4-partitus, laciniis distincte breviterque petiolulatis foliaceis viridibus lanceolatis vel anguste oblongo-lanceolatis plerumque 8–11 mm. longis longe attenuatis utrinque dense pilosulis patentibus vel saepius subrecurvis; corolla tubulosa basi vix vel non inflata 2 cm. longa 4–5 mm. lata, ubique densissime pilis longis pluricellularibus patentibus villosa, lobis 4 ovato-rotundatis 3 mm. longis obtusis erectis.—Argentina: Misiones, in distr. urb. Posadas, praecipue in vicin. coloniae Bonpland, *W. Lilliesköld* (Herb. Stockholm, type).

The Argentine plant is a relative of *M. luteo-rubra* Benth., of Brazil, and *M. Rojasiana* Chod. & Hassl., of Paraguay. The former is distinguished by non-foliaceous calyx segments and by more abundant pubescence, as well as by the short hairs of the corolla. *M. Rojasiana* differs in having a corolla that is swollen above the middle and narrowed toward the apex; also in its broad sessile calyx segments.

The species is named for Dr. Gunnar Samuelsson, of the State Museum of Stockholm, to whom the writer is greatly indebted for the generous loan of a large amount of South American material of the Rubiaceae.

***Manettia paranensis*, sp. nov.**—Herba volubilis, caulibus gracilibus fusco-olivaceis densiuscule pilis brevibus patentibus sordidis pilosulis, internodiis elongatis; stipulae 1–1.5 mm. longae triangulari-subulatae erectae subadpressae puberulae persistentes; folia petiolata opposita, petiolo gracili 5–13 mm. longo minute pilosulo; lamina ovata membranacea 3–5.5 cm. longa, 1.2–3 cm. lata, sensim vel abrupte acuminata, acumine attenuato acutissimo, basi obtusa vel rotundata, interdum abrupte contracta et brevissime decurrens, fere concolor, supra sparse hispidula vel glabrata, costa venisque prominulis, subtus sparse subadpresso-hispidula vel scaberula, costa gracili elevata, nervis lateralibus utroque latere c. 5 prominulis angulo acuto adscendentibus arcuatis remote a margine conjunctis, nervulis obscuris; flores in axillis foliorum reductorum solitarii subracemose dispositi, vel interdum terminales et solitarii, pedun-

culis plerumque 1–3 cm. longis minute pilosulis prope medium foliaceo-bibracteolatis; hypanthium obovoideum 2 mm. longum glabrum vel sparse puberulum; calyx 4-partitus, laciniis viridibus foliaceis 7–11 mm. longis et 5–6 mm. latis, late ovatis vel ellipticis, acutis vel acuminatis, basi angustatis, glabris vel glabratis; corolla ut videtur coccinea extus glabra 3.5–4.3 cm. longa tubuloso-infundibuliformis, e basi angusta versus orem sensim dilatata, supra 1 cm. lata, lobis rotundato-ovatis erectis 8 mm. longis et aequilatis obtusis vel acutiusculis.—Brazil: Serra do Mar, State of Paraná, Caiguava, haud procul a Carvalho aquaeductu, alt. 1,950 m., November 19, 1909, *P. Dusén 8964* (Stockholm herb., type). Serra do Mar, Monte Alegre, in silva primaeva, 1,000 m., November 23, 1909, *Dusén 9007* (Stockholm).

The plant belongs in the group of *M. cordifolia* Mart., the species to which it was referred by the collector. It is sufficiently distinct from that species, however, in the very large and broad calyx segments, whose form is not approached by any specimens of *M. cordifolia* that I have seen. In Wernham's key to the species of *Manettia*, *M. paranensis* runs directly to *M. stipulosa* Wernham, which is based on a specimen collected in Brazil by Gardner. I have seen no material of *M. stipulosa*, but according to description it differs from the present plant in having glabrous leaves, much larger stipules, and much narrower calyx lobes.

***Manettia Schunkei* Standl. Field Mus. Bot. 4: 273. 1929.**

Several additional specimens of this recently described Peruvian species are now at hand, and deserve citation here: Peru: Chanchamayo Valley, 1,200–1,500 m., in March and April, 1929, *Carlos Schunke 1444, 1461, 1428*.

***Manettia poliodes* Standl. Field Mus. Bot. 8: 151. 1930.**

An additional collection of this species has appeared among material received recently on loan from Berlin: Peru: Valle de Apúrimac, alrededores del pueblo de Mollepata, 2,750 m., December, 1926, *F. L. Herrera 1230*.

***Manettia asclepiadacea*, sp. nov.**—Herbacea volubilis, caulibus gracilibus olivaceis ad angulos retrorso-pilosulis, internodiis valde elongatis; stipulae latissimae et brevissimae ad margines breviter setuloso-pectinatae; folia petiolata opposita, petiolo gracili 1–1.5 cm. longo sparse minute pilosulo; lamina membranacea elliptica 10–13 cm. longa, 4.5–5.5 cm. lata, abrupte longiacuminata, acumine anguste triangulari longe attenuato, basi acuta, glabra, supra viridis, costa venisque manifestis sed vix elevatis, subtus pallida, minutissime pallido-puncticulata, costa crassiuscula vix elevata, nervis lateralibus utroque latere c. 6 obscuris arcuatis, nervulis obsoletis; inflorescentiae

axillares subsessiles umbelliformes, multiflorae, pedicellis crassiusculis 5-9 mm. longis puberulis; hypanthium obovoideum 5 mm. longum dense pilosulum; calyx 4-partitus, laciniis c. 8 mm. longis, fructiferis usque ad 10 mm. et ultra, lanceolatis vel anguste ovatis acuminatis crassiusculis puberulis ciliatis adscendentibus viridibus; corolla breviter densiuscule albido-pilosula, tubo 12 mm. longo supra paullo dilatato albo fauce 2.5 mm. lato, lobis luteis ad apices purpureis anguste lanceolato-oblongis 4.5 mm. longis acutiusculis; antherae albae; capsula immatura obovoidea 8 mm. longa basi acuta vel attenuata sparse pilosula.—Peru: In dense forest, San Antonio, on Río Itaya, Dept. Loreto, alt. 110 m., September 18, 1929, *E. P. Killip and A. C. Smith 29476* (Herb. Field Mus. No. 613,724, type).

In general appearance as well as in details of the flowers the plant is similar to *Manettia tarapotensis* Wernham, but in that there are eight rather than four calyx lobes.

Lecanosperma lycioides Rusby, Bull. Torrey Club 20: 431. pl. 168. 1893.

The following collections of this rather common plant probably are older than any of those cited previously: Bolivia: Without locality, in 1839, *Pentland 34* (Herb. Paris). Prov. Yunquisivi, December, 1846, *Weddell 4186* (Herb. Paris). Near Chaquilaca (?), *D'Orbigny 1189* (Herb. Paris).

Bouvardia dictyoneura Standl. N. Amer. Fl. 32: 109. 1921.

The species has been known only from the type, collected in Chiapas, Mexico. A Central American collection may now be reported: Guatemala: Volcán de Atitlán, 2,700 m., January, 1874, *Salvin* (Herb. Kew.). In the Guatemalan specimen the leaves are sparsely hispidulous beneath, rather than glabrous as in the type, but in all other characters it seems to agree with the Mexican material.

Bouvardia Rekoii Standl. N. Amer. Fl. 32: 108. 1921.

This Mexican species has been known previously only from the type, collected in Mexico. One additional collection may now be reported: Mexico: Forests near Arúmbaro, *Ghiesbreght 860* (Herb. Paris). A shrub 1.5-1.8 m. high; corolla orange-red.

Bouvardia villosa Standl. N. Amer. Fl. 32: 107. 1921.

Known heretofore only from *Conzatti & Vásquez 1486*, from Oaxaca, Mexico. A single additional collection has come to the attention of the writer: Oaxaca: Without definite locality, in 1834, *Andrieux* (Herb. Paris).

Bouvardia orizabensis, sp. nov. — Frutex parce ramosus, ramis vetustioribus subteretibus vel obtuse tetragonis ochraceis, novellis in sicco fuscis glabris, internodiis foliis paullo brevioribus; stipulae persistentes erectae basi in vaginam brevem connatae 4–5 mm. longae glabrae vel obscure puberulae, parte libera anguste triangulari abrupte attenuata; folia plerumque ternata breviter petiolata membranacea, petiolo gracili 2–4 mm. longo glabro; lamina anguste lanceolata vel oblongo-lanceolata 4.5–7.5 cm. longa 1.5–2.8 cm. lata, longe angustaque attenuato-acuminata, basi acuta vel obtusa, in sicco fusca, glabra, supra interdum sublucida, venis non elevatis, subtus paullo pallidior, costa gracili prominente, nervis lateralibus utroque latere 5–6 angulo acutissimo adscendentibus gracillimis prominulis; flores ad apices ramulorum cymosi, cymis sessilibus foliaceo-bracteatis paucis vel multifloris densis, ramis densiuscule puberulis vel glabris, pedicellis plerumque 1–3 mm. longis, floribus interdum sessilibus; hypanthium hemisphaericum 1.5 mm. longum basi rotundatum glabrum vel obscure puberulum; calyx 4-partitus, laciniis 2.5–3 mm. longis erectis triangulari-linearibus longe attenuatis glabris vel glabratis viridibus; corolla gracilis extus glabra, tubo 14–17 mm. longo supra paullo sensimque dilatato ore 3 mm. lato intus supra basin dense villosa, lobis 4 late ovatis 3–4 mm. longis acutiusculis intus glabris suberectis; antherae anguste oblongae inclusae; stylus gracilis glaber interdum exsertus; capsula didyma c. 6 mm. longa et 7–8 mm. lata glabra; semina numerosa c. 2 mm. lata fusco-ferruginea late alata compressa. — Mexico: Orizaba, Veracruz, September, 1854, *M. Botteri* 604 (Herb. Paris, type). Orizaba, *Botteri* (Herb. Paris). Wartenberg, near Tantoyuca, Prov. Huasteca, in 1858, *Ervendberg* 105 (Herb. Paris).

It is surprising that a plant so well marked as this has not come to light in the ample *Bouvardia* material of American herbaria which has been examined at one time or another by the writer. If any specimens have been seen, their distinguishing characters were overlooked. *Bouvardia orizabensis* is related clearly to *B. bouvardioides* (Seem.) Standl., of the mountains of western Mexico. In that species the branchlets are pruinose-puberulent, and the stipules are united into a pluriaristate sheath.

Cinchona amazonica, sp. nov. — Arbor mediocris, ramulis crassiusculis subcompressis et obtuse quadrangulatis fusco-brunneis dense minutissime sericeis; stipulae caducae, non visae; folia petiolata opposita, petiolo 1.5–3 cm. longo gracili minute sericeo vel glabrato; lamina crasse membranacea obovato-elliptica 15–25 cm. longa, 7.5–12 cm. lata, apice obtusa vel subacuta abrupte breviterque acuminata, acumine anguste triangulari attenuato, basin versus longe angustata, supra viridis, costa venisque prominulis, glabra, subtus paullo pallidior, sparse et minutissime sericea vel glabrata, costa gracili elevata, nervis lateralibus utroque latere c. 13 obliquis angulo circa semirecto adscendentibus gracilibus prominentibus fere rectis

prope marginem conjunctis, nervulis prominulis laxè reticulatis; inflorescentia terminalis maxima late paniculata laxè multiflora sessilis c. 30 cm. longa et 35 cm. lata, basi trichotoma, supra copiose ramosa, ramis oppositis divaricatis dense puberulis vel sericeis, bracteis linearibus vel lineari-subulatis usque ad 1.5 cm. longis longe attenuatis extus dense sericeis, floribus in cymulas parvas densas aggregatis plerumque sessilibus; hypanthium turbinatum 1.5 mm. longum dense minute sericeum basi acutum, calyce 5-partito, laciniis 1.5–2 mm. longis extus minute sericeis lineari-attenuatis vel angustissime triangulari-lanceolatis erectis; corolla 3.5–4 mm. longa extus minute denseque tomentella in alabastro obtusa, tubo cylindraceo, lobis 5 oblongis obtusis tubum aequantibus patentibus intus dense albo-villosis.—Peru: Pebas, on the Amazon River, Dept. Loreto, in forest, July 24, 1929, *Llewelyn Williams* 1747 (Herb. Field Mus. No. 604,562, type).

It certainly is not advisable to describe further species in the genus *Cinchona*, in which already there have been described so many, although but few of them can be maintained on characters that would be considered significant in other groups of the Rubiaceae. I do not know that the present plant is more worthy of specific rank than most of the other species already described, but it does seem to be recognizable, so far as the single specimen is concerned, and does not match any of the numerous species of which photographs or specimens are available for comparison. In the extremely small size of its flowers *Cinchona amazonica* resembles *C. micrantha* R. & P., but in that the calyx lobes or teeth are very short and broadly triangular.

Macrocnemum latilimbum Standl. Field Mus. Bot. 8: 154. 1930.

A second collection of this species may be reported: Colombia: Forest near Santa Ana, Prov. Mariquita, February, 1843, *J. Linden* 1165 (Herb. Paris). "Flowers pink."

Remijia longifolia Benth. in herb., sp. nov.—Arbuscula 4.5–6 m. alta, ramulis crassis obtuse trigonis dense hirsutis et pilosis; stipulae coriaceae lanceolato-oblongae 8 cm. longae longe attenuatae dense hirsutae et pilosae erectae; folia petiolata coriacea ternata, petiolo crasso c. 5 cm. longo dense hirsuto; lamina oblanceolato-oblonga c. 33 cm. longa et 11.5 cm. lata apice acuta et abrupte caudato-cuspidata, basin versus longe sensim angustata, supra in sicco fusca sparse hirsuta, venis impressis, subtus densiuscule pilis plerumque patentibus fulvis hispido-hirsuta, costa crassa elevata, nervis laterilibus utroque latere c. 17 angulo semirecto vel paullo latiore adscendentibus gracilibus elevatis leviter arcuatis vel fere rectis marginem attingentibus, nervulis non elevatis arcte reticulatis; inflorescentiae axillares 20 cm. longe pedunculatae subspiciformes et c. 20 cm.

longae, e verticillis paucis cymarum remotis composita, rhachi breviter dense pilosa et sparse hirsuta, cymis parvis paucis vel multifloris densis brevissime pedunculatis, infimis usque ad 1.5 cm. longe pedunculatis, bracteis brevibus ovatis acutis vel acuminatis strigosis, floribus sessilibus; hypanthium 3 mm. longum globoso-oblongum densissime pilis fulvis vel subferrugineis subadpressis pilosum basi obtusum; calyx 2.5 mm. longus extus subadpresso-hispidulus primo truncatus et remote minutissime denticulatus, in anthesi inaequaliter fissus; corolla extus densissime sericeo-pilosa, tubo crasso 10 mm. longo supra vix dilatato, lobis 5 crassis 5.5–6 mm. longis anguste oblongis obtusis intus glabris; stamina inclusa infra medium tubi inserta, antheris anguste oblongis vel linearibus; stylus brevis, lobis oblongo-linearibus; capsula oblonga 2–4 cm. longa fusco-ferruginea c. 13 mm. lata, basi acuta, glabrata; semina numerosa brunnescentia c. 1.5 cm. longa lucida, parte centrali 3–4 mm. longa ala tenui lata cincta.—Brazil: Ad Panuré, in silvis humilioribus, December, 1852, *R. Spruce 2855* (Herb. Kew., type).

Related to *Remijia firmula* (Mart.) Wedd., which has a pyriform capsule only 1 cm. long and stipules only 3 cm. in length. The specimen is ample and complete, but Spruce's notes read: "Fragment, but the ants plaster up the flower buds."

Ladenbergia Pittieri Standl. Field Mus. Bot. 8: 51. 1930.

This species, described from the mountains of Venezuela, may now be recorded from Colombia: Prov. Ocaña, 1,500 m., July, 1846–52, in flower, *L. Schlim 691* (Herb. Paris). Flowers white.

Ladenbergia macrocarpa (Vahl) Klotzsch in Hayne, *Arzneigew.* 14: sub *pl.* 15. 1846. *Cinchona macrocarpa* Vahl, *Skrivt. Naturh. Selsk.* 1: 20. 1790.

Colombia: Highlands of Santa Rosa, Antioquía, 1,800–2,500 m., *Lehmann 7432*. Upper Río Guatepe, between Medellín and Nare, Dept. Antioquía, *Kalbreyer 1443* (Herb. Berol., Herb. Kew.); a shrub or small tree 8–14 m. high; leaves thick, stiff, leathery, lustrous; flowers white, very fragrant; in forest in open sunny places.

Ladenbergia ferruginea, sp. nov.—Frutex 4-metralis, ramulis gracilibus obtuse tetragonis densiuscule pilis ferrugineis rigidiusculis patentibus hispidulo-pilosis, internodiis elongatis; stipulae caducae, non visae; folia petiolata opposita subcoriacea, petiolo gracili 1.5–3 cm. longo ferrugineo-piloso; lamina oblongo-elliptica vel lanceolato-oblonga 14–25 cm. longa 5.5–9 cm. lata acuta vel breviter acuminata, acumine acutiusculo, basi acuta vel basin versus longius angustata, supra in sicco fusca, glabra vel primo ad costam ferrugineo-villosa, venis non elevatis, subtus fusco-ferruginea, praesertim ad venas ferrugineo-pilosa vel subtomentosa, costa gracili elevata, nervis lateralibus utroque latere c. 16 angulo lato abeuntibus prominentibus gracilibus fere rectis juxta marginem conjunctis, nervulis obscuris laxe reticulatis; inflorescentia terminalis cymoso-paniculata 6–7 cm.

longe pedunculata, basi trichotoma, 10–12 cm. longa et fere aequilata, ramis crassiusculis adscendentibus, infimis 3–5 cm. longis dense ferrugineo-tomentosis, cymis densis multifloris c. 3 cm. latis, bracteis lineari-subulatis extus tomentosis pedicellis aequilongis, pedicellis plerumque 2–3 mm. longis crassis; hypanthium oblongo-obovoideum 2.5–3 mm. longum dense ferrugineo-pilosum; calyx tubuloso-campanulatus 3.5 mm. longus sparse ferrugineo-pilosus brevissime dentatus, dentibus triangularibus vel latissime depresso-triangularibus acutis vel apiculatis; corolla alba extus dense adpresso-pilosa et obscure tomentella, tubo gracili 10–12 mm. longo supra vix dilatato, lobis 6–7 mm. longis anguste lanceolatis patentibus attenuatis extus dense strigosis, intus glabris sed prope margines pilis apicem versus inflatis minutis puberulis; antherae inclusae; stylus inclusus. Peru: Chunchumayo, Prov. Sandía, Dept. Puno, in forest near the river, alt. 900 m., June 13, 1902, A. *Weberbauer* 1175 (Herb. Berol., type).

Distinguished from other Peruvian species by the abundant rust-colored pubescence.

Capirona decorticans Spruce, Journ. Linn. Soc. 3: 200. 1859.

Colombia: Llano de San Martín, Prov. Bogotá, 210 m., *Triana* 1791 (Herb. Paris).

Ferdinandusa loretensis, sp. nov.—Arbor 6-metralis, ramulis crassiusculis subteretibus ferrugineis sparse puberulis vel glabris; stipulae non visae; folia breviter petiolata opposita crasse coriacea, petiolo crasso 8–14 mm. longo ferrugineo-puberulo vel glabrato; lamina oblongo-elliptica 10.5–15 cm. longa 6–7 cm. lata abrupte breviterque acuminata, acumine triangulari obtuso, basi rotundata vel abrupte breviterque contracta, supra in sicco fusca, lucida, glabra, venis non elevatis, subtus fusco-brunnescens, ubique densiuscule pilis brevissimis subadpressis hispidula vel serius glabrata, costa crassa elevata, nervis lateralibus utroque latere c. 10 angulo semirecto adscendentibus elevatis gracilibus fere rectis in marginem desinentibus, nervulis transversis prominentibus distantibus irregularibus subparallelis; inflorescentia terminalis cymoso-paniculata parva pauciflora breviter pedunculata, ramis crassis glabris vel sparse puberulis, pedicellis crassis usque ad 6 mm. longis fere glabris, bracteis deciduis; hypanthium anguste turbinatum 2 mm. longum basin versus attenuatum glabrum; calyx c. 1.5 mm. longus et 3.5 mm. latus glaber breviter 4-dentatus, dentibus minutis remotis triangularibus acutis erectis; corolla alba glabra, tubo gracili 3–4.5 cm. longo supra vix vel non dilatato 2.5–3 mm. crasso fauce glabro, lobis 4 patentibus asymmetricis 8–10 mm. longis intus glabris; antherae breviter exsertae 2 mm. longae curvatae; stylus gracilis glaber c. 1 cm. longe exsertus, stigmatibus bilobis, lamellis ovalibus c. 2 mm. longis; capsula oblanceolata-oblonga c. 3.8 cm. longa et 1.4 cm. lata glabra fusco-ferruginea, apice rotundata, basin versus longe attenuata; discus crassus annuliformis calyce multo brevior.—

Peru: Mishuyacu, near Iquitos, Dept. Loreto, in forest, altitude about 100 m., May-June, 1930, *G. Klug 1348* (Herb. Field Mus. No. 622,213, type).

The material available is rather fragmentary and unsatisfactory, but it is complete so far as flowers and fruit are concerned. The plant is well distinguished from the related species by the unusually long and slender corolla tube, and by the characteristic pubescence of the lower leaf surface.

Hillia Goudotii, sp. nov.—Omnino glabra, ramulis crassis subteretibus pallide ferrugineis, internodiis elongatis; stipulae caducae, non visae; folia breviter petiolata opposita crasse coriacea, petiolo crassiusculo 0.8-2.5 cm. longo; lamina ovata, elliptico-ovata vel oblongo-elliptica 14-20 cm. longa 5-8 cm. lata subabrupte longiacuminata, acumine angusto attenuato, basi acuta vel interdum subobtusa et abrupte breviterque contracta, in sicco fusca, subtus fere concolor, nervis obscuris, lateralibus utroque latere c. 6 angulo acutissimo adscendentibus; flores ad apicem rami terni c. 6 mm. longe pedicellati, pedicellis crassiusculis; hypanthium oblongum c. 1 cm. longum 4 mm. latum basi acutum; calyx 6-partitus, laciniis viridibus oblongo-linearibus 2.5-3 cm. longis 3-5 mm. latis longe attenuatis erectis; corolla gracilis infundibuliformis, tubo 4-4.5 cm. longo medio 1.5-2 mm. lato supra abrupte dilatato ore 1 cm. lato, lobis 6 ovato-rotundatis c. 6 mm. longis apice rotundatis; antherae inclusae lineares 9 mm. longae; capsula cylindracea 9 cm. longa extus fusca, valvis post dehiscenciam 1.8 cm. latis, basi et apice acuta; semina numerosissima parva cum coma c. 1 cm. longa.—Colombia: Río Sucio, Cauca Valley, January, 1844, *Justin Goudot* (Herb. Paris, type).

The Colombian plant is a relative of *Hillia illustris* (Vell.) Schum., which ranges rather widely in South America. The latter differs in its solitary flowers with shorter calyx segments and stouter, usually larger corolla.

Exostema Leonis, sp. nov.—Frutex ramosus 3-4-metralis, ramulis crassiusculis, vetustioribus subteretibus, fuscis, novellis pilulis minutis subadpressis indutis; stipulae intrapetioloares, 3 mm. longae, basi brevissime vaginantes, extus strigillosae, e basi late deltoidea subulato-acuminatae; folia opposita, petiolo gracili, 1-1.8 cm. longo, supra anguste sulcato, sparse et minute adpresso-pilosulo; limbus ellipticus vel oblongo-ellipticus, 6-8.5 cm. longus, 3-5 cm. latus, apice acutus vel obtusus, rarius rotundatus, basi obtusus vel acutus, subcoriaceus, supra viridis, sublucidus, sparse pilulis brevissimis strigillosus, nervis non elevatis, subtus pallidior, ad nervos sparse et minute adpresso-pilosulus, costa valida, elevata, nervis lateralibus utroque latere c. 6, gracilibus, prominentibus, angulo acuto adscendentibus, arcuatis, prope marginem planum obscure conjunctis; inflorescentia terminalis, corymbosa, dense pauciflora, c. 4 cm. longa

et lata, sessilis, ramulis lateralibus primariis 12–14 mm. longis, dense cano-strigillosis, pedicellis c. 5 mm. longis, crassis, dense strigillosis, flore terminali sessili; capsula immatura angulato-cylindracea, 1.5–1.8 cm. longa, fere 5 mm. lata, basi obtusa, dense cinereo-strigillosa; discus elevatus, 3 mm. altus, glaber; calycis lobi ad apicem capsulae persistentes, ovaes vel elliptico-obovati, 2.5–3 mm. longi, apice obtusi vel rotundati, extus dense cinereo-strigillosi; semina numerosa, parva, linearia, utrinque in alam angustam tenuem producta.—Cuba: Loma Pelada, Cayajabos, Pinar del Río, August 9, 1928. *Brother León & J. T. Roig 13531* (Herb. N. Y. Bot. Gard., type).

Although known only from incomplete material, this plant seems to represent a distinct and well-marked species of *Exostema*. It appears to be related to *E. rotundatum* Griseb. and *E. ellipticum* Griseb., of Cuba, both of which are glabrous throughout and have narrow, acute or acuminate calyx lobes.

Coutarea hexandra (Jacq.) Schum. in Mart. Fl. Bras. 6^a: 196. 1889. *Portlandia hexandra* Jacq. Sel. Stirp. 63. 1763. *Bignonia triflora* Pav. ex DC. Prodr. 9: 148. 1845, as synonym, non Vell.

In the Paris herbarium there is a specimen collected by Ruiz and Pavón and bearing the name *Bignonia triflora*. That binomial was mentioned by DeCandolle, loc. cit., after his description of *Bignonia triflora* Vell., with the statement "*B. triflora* Pav.! herb. est Rubiaceae quaedam." The plant is clearly *Coutarea hexandra*.

Coutarea Lindeniana Baill. Adansonia 12: 300. 1879.

Another collection of this rather rare plant is worth citing: Colombia: Dry plains near San José de Cucutá, Prov. Pamplona, May, 1843, *Linden 4371* (Herb. Paris). Flowers white.

Pogonopus speciosus (Jacq.) Schum. in Mart. Fl. Bras. 6^a: 265. 1889. *Macrocnemum speciosum* Jacq. Hort. Schoenbr. 1: 19. 1797.

This showy tree has been reported in Colombia only from Santa Marta and Armenia. The following collection furnishes a further record of its distribution: Colombia: Prov. Ocaña, 3,000 m., *Schlim 755* (Herb. Paris).

Chimarrhis Williamsii Standl. Field Mus. Bot. 8: 162. 1930.

Another specimen of this recently described species has come to hand: Peru: Mouth of Río Santiago, upper Marañón, 160 m., in upland forest, not very rare, December 3, 1924, *G. Tessmann 4668* (Herb. Berol.). A tree 25 m. high, the trunk 50 cm. in diameter; corolla pure white. Vernacular name, "yacu-caspi."

Rustia splendens (Karst.) Standl. Field Mus. Bot. 7: 26. 1930. *Henlea splendens* Karst. Fl. Columb. 1: 157. pl. 78. 1861.

Colombia: Llano de San Martín, Prov. Bogotá, 300 m., *Triana* 1785 (Herb. Paris).

Rustia occidentalis (Benth.) Hemsl. Biol. Centr. Amer. Bot. 2: 14. 1881. *Exostema occidentale* Benth. Bot. Voy. Sulph. 104. 1844.

Colombia: Prov. Ocaña, 1,800 m., November, 1879, *Kalbreyer* 1246 (Herb. Kew.); a shrub 3-3.5 m. high; flowers fragrant. Río San Juan, Prov. Chocó, 80 m., *J. Triana* 1784 (Herb. Paris).

Sickingia Williamsii, sp. nov.—Arbor glabra, ramulis crassis ochraceis subteretibus lenticellis crebris pallidis conspersis; stipulae non visae; folia brevissime petiolata opposita, petiolo crasso 7-14 mm. longo; lamina crasse membranacea elliptico-obovata 28-40 cm. longa 15.5-21 cm. lata obtusa basin versus paulo angustata, basi ipsa acuta, supra lucida, costa venisque prominulis, nervulis prominulis et arctissime reticulatis, subtus vix pallidior, costa crassiuscula elevata, nervis lateralibus utroque latere c. 19 angulo semirecto adscendentibus gracilibus prominentibus fere rectis juxta marginem conjunctis, nervulis prominentibus arctissime reticulatis; capsulae lignosae pedicellis crassis 1.5 cm. longis stipatae ovali-oblongae 6.5 cm. longae et 3 cm. latae lenticellis pallidis inaequalibus dense conspersae basi et apice obtusae; semina numerosissima tenuia semi-orbicularia 1.5-2 cm. longa, ala tenui pallida.—Peru: Tarapoto, Dept. San Martín, alt. 750 m., December 4, 1929, *Llewellyn Williams* 5531 (Herb. Field Mus. Nos. 614,414 and 614,253, type).

Vernacular name, "puca quiro." The type material consists of a short branchlet with leaves, and some detached capsules. Without flowers the exact position of this species is somewhat uncertain, but it is different from any species known otherwise from the upper Amazonian region. The leaves somewhat suggest those of *S. catapifolia* Standl., described from Bolivia.

Sickingia paraguayensis, sp. nov.—Ramuli crassiusculi teretes fusco-ferruginei rimosi glabri, internodiis valde elongatis; stipulae caducae lineari-lanceolatae attenuatae fusco-ferrugineae glabrae erectae; folia petiolata opposita coriacea, petiolo crassiusculo 8-13 mm. longo glabro; lamina ovali-elliptica vel oblongo-elliptica 5.5-9 cm. longa 2-5.5 cm. lata apice obtusa vel rotundata et breviter obtuse producta, basi rotundata usque ad acutiuscula, glabra, supra fusca, sublucida, costa venisque non elevatis, subtus fere concolor, brunnescens, in axillis interdum domatiata et sparse barbata, costa gracili elevata, nervis lateralibus utroque latere c. 9 angulo latiusculo adscendentibus gracilibus prominentibus leviter arcuatis vel fere rectis prope marginem conjunctis, nervulis vix prominulis arctissime reticulatis; capsula globosa 2 cm. diam. basi et apice rotundata; semina numerosa valde compressa ala inclusa c. 12 mm. longa et 5 mm. lata, parte seminifera ferruginea, ala tenui pallida.—Paraguay: Without locality, April-May, 1845, *H. A. Weddell* 3256 (Herb. Paris, type).

This is probably the southernmost species ever reported for the genus. The material is not as complete as one might desire, but it seems to illustrate a species distinct from any of those recorded from Brazil. The plant is noteworthy for the comparatively broad and obtuse leaf blades.

Phitopsis sterculioides, sp. nov. — Arbor 7.5–9 m. alta, ramulis crassis dense fulvo-tomentosis et plus minusve subadpresso-hirsutis; stipulae non visae, caducae; folia breviter petiolata opposita, petiolo c. 2 cm. longo dense fulvo-piloso; lamina crasse membranacea oblongo-obovata c. 26 cm. longa et 12.5 cm. lata, apice rotundata et breviter protracta, acumine late triangulari vix 5 mm. longo obtuso, basin versus longiuscule angustata, basi ipsa acuta, supra viridis, subdense fulvo-hirsuta, pilis patentibus vel subadpressis, costa venisque vix elevatis, subtus paullo pallidior, ubique dense pilis brevibus fulvis hirsuta, secus venas subadpresso-hirsuta, costa crassiuscula elevata, nervis lateralibus utroque latere c. 22 subobliquis angulo lato abeuntibus gracilibus prominentibus leviter curvis prope marginem conjunctis, nervulis prominentibus arcte reticulatis; inflorescentia terminalis sessilis late paniculata laxa multiflora c. 23 cm. longa et aequilata, basi trichotoma, ramis paucis adscendentibus vel subdivaricatis subcompressis dense fulvo-tomentosis, floribus laxa cymosis, cymulis plerumque trifloris, flore centrali sessili vel subsessili, aliis usque ad 2 cm. longe pedicellatis, bracteis caducis, bracteolis ad basin calycis connatae et calycem fere totum includentibus usque ad 1.5 cm. longis dense tomentosis et adpresso-hirsutis; hypanthium obconicum 4–6 mm. longum basi acutum dense fulvo-tomentosum; calyx in alabastro clausus extus dense fulvo-tomentosus et adpresso-hispidulus late ovoideus apice obtusus c. 1 cm. longus, in anthesi irregulariter ruptus, intus dense sericeus et tomentellus; corolla alba extus glabra, tubo lato c. 7 mm. longo intus supra medium dense hirsuto, lobis c. 7 late rotundato-ovatis 10 mm. longis apice obtusis vel rotundatis intus glabris; stamina exserta, filamentis gracilibus infra medium breviter hirsutis; stylus gracilis glaber fere 1 cm. longus. — Peru: In dense forest, Pichis Trail, Eneñas, Dept. Junín, alt. 1,600–1,900 m., June 30–July 2, 1929, *E. P. Killip and A. C. Smith 25747* (Herb. Field Mus. No. 607,646, type).

There is known only one other species of this Peruvian genus, the original *P. multiflora* Hook. f., described from Moyobamba and Tarapoto. I have seen material of the collections on which that was based, and from them the present plant differs in its broader leaves on longer petioles, in its larger flowers, and especially in its very large and open inflorescence. Hooker does not mention in his description the fact that before anthesis the calyx is completely closed, and that it ruptures irregularly during anthesis, but this is the case with the species here described.

Rondeletia gracilispica, sp. nov.—Frutex gracilis, ramulis teretibus glabris ferrugineis, internodiis elongatis, interdum in statu juvenili sparse tomentosis sed cito glabratibus; stipulae persistentes erectae 2–4 mm. longae anguste triangulares acuminatae ferrugineae glabrae vel primo sparse tomentosae; folia breviter petiolata opposita crasse membranacea elliptico-oblonga vel oblanceolato-oblonga 5–14 cm. longa 2–4.5 cm. lata longe acuminata basi acuta vel basin versus sensim attenuata, supra in sicco fusca, glabra, sublucida, subtus paullo pallidior, in statu juvenili arachnoideo-tomentosa sed cito glabrata vel glabra, costa gracili elevata, nervis lateralibus utroque latere c. 7 angulo acuto adscendentibus gracillimis prominulis arcuatis juxta marginem conjunctis, nervulis non elevatis laxe reticulatis; inflorescentia terminalis paniculata spiciformis 7–15 cm. longa 1–1.5 cm. lata laxe multiflora, floribus parvis in cymulas parvas paucifloras densiusculas dispositis sessilibus vel brevissime pedicellatis, bracteis minutis lanceolato-subulatis; hypanthium subglobosum fere 1 mm. longum laxe arachnoideo-tomentosum; calyx 4-lobus, laciniis valde inaequalibus oblongo-lanceolatis vel oblongo-ovatis acutis vel acuminatis erectis 0.5–1 mm. longis fere vel omnino glabris; corolla gracilis extus glabra, tubo cylindraceo 5–6 mm. longo, lobis 4 rotundatis patentibus intus glabris c. 1.2 mm. longis; antherae inclusae; capsula non visa.—Mexico: “Sierra San Pedro Nolasco, Talea, &c.” Oaxaca, 1843–44, *C. Jurgensen* 935 (Herb. Kew., type), 776 (Herb. Kew.). Oaxaca, in 1842, *Liebmann* (Herb. Paris).

The plant belongs to the writer's group *Laniflorae* of the genus *Rondeletia*, a group characterized by the elongate, spikelike inflorescence. From all the species of that association this differs in its completely glabrous corolla.

Rondeletia peruviana, sp. nov.—Arbor 10-metralis, trunco 15 cm. diam., ramulis crassiusculis teretibus fuscis striatis, novellis dense et adpresse albido-tomentosis, internodiis abbreviatis; stipulae persistentes 4–7 mm. longae oblongae vel oblanceolato-oblongae obtusae vel acutiusculae erectae prope basin et ad margines tomentosae, aliter glabrae; folia breviter petiolata opposita crasse membranacea, petiolo valido 3–12 mm. longo dense tomentoso; lamina elliptica vel oblongo-elliptica 6–14.5 cm. longa 2.5–6.5 cm. lata sensim vel subabrupte acuminata, acumine angusto attenuato, basi acuta vel rarius obtusa, supra in sicco fusco-viridis, glabra, venis subimpressis, subtus tomento albido densissimo induta, nervis lateralibus utroque latere c. 11 angulo semirecto adscendentibus gracilibus arcuatis juxta marginem conjunctis; inflorescentia terminalis vel interdum lateralis cymoso-paniculata laxe pauciflora c. 4 cm. longa, ramis brevibus crassis densissime tomentosis, floribus sessilibus vel 2 mm. longe pedicellatis, bracteis fere obsoletis; hypanthium oblongum 2–2.5 mm. longum dense tomentosum; calyx 4-lobus extus tomentosus, lobis oblongis vel anguste triangularibus erectis acutis vel obtusiusculis; corolla extus dense albido-tomentosa, tubo crassiusculo 11–15 mm. longo supra vix dilatato ore c. 2.5 mm. lato,

lobis 4 rotundatis crispis 3 mm. longis patentibus intus glabris; antherae inclusae; capsula oblongo-ovoidea c. 6 mm. longa et 4 mm. lata glabrata basi rotundata; semina numerosissima minuta ferruginea angulata.—Peru: Mouth of the Río Santiago, upper Marañón, alt. 160 m., in upland forest, October 7, 1924, G. Tessmann 4223 (Herb. Berol., type).

“Corolla olive-brown outside, the lobes white within.”

The genus *Rondeletia* has not been reported south of Ecuador, although I have seen a specimen of the genus labeled as from Bolivia, but in that case the locality data were open to question. The present plant adds another genus to the already long list of genera of Rubiaceae known from Peru.

Oldenlandia filicaulis Schum. in Mart. Fl. Bras. 6^a: 271. pl. 127, f. 2. 1889.

Brazil: Campos da Serra do São Ignacio, February, 1907, *Ule* 7560 (Herb. Kew.). Lake near Remanso, December, 1906, *Ule* 7419 (Herb. Kew.).

Oldenlandia Dusenii, sp. nov.—Herba gracilis repens parce ramosa ad nodos radicans, caulibus gracillimis subdense albo-villosis, internodiis foliis longioribus; stipulae brevissimae minutae et pilis occultae in lacinias paucas filiformes partitae; folia petiolata opposita, petiolo gracili 3–6 mm. longo albo-villoso; lamina membranacea orbicularis interdum latior quam longa, rare ovato-rotundata, 7–14 mm. longa et aequilata, apice breviter apiculato-acuminata, basi rotundata vel interdum abrupte contracta et cuneatim decurrens, supra dense breviterque villosa, subtus pilis longioribus villosa, costa venisque subtus inconspicuis, nervis lateralibus utroque latere c. 3; flores axillares solitarii, pedicellis filiformibus 5–20 mm. longis saepe curvis sparse villosis; hypanthium late obovoideum 1.5 mm. longum densissime albido-villosum; calyx 4-partitus, laciniiis 2.5 3.5 mm. longis erectis lanceolatis vel anguste ovatis acuminatis extus breviter villosis persistentibus viridibus; corolla 6–7 mm. longa infundibuliformis extus sparse villosula, lobis 4 late triangularibus obtusis suberectis tubo triplo brevioribus; capsula didymo-obovoidea 2.5 mm. longa fere omnino inferior, seminibus paucis obtuse angulatis.—Brazil: Tres Barras, State of Paraná, locis subhumidis graminosis, alt. 760 m., January 26, 1916, *P. Dusen* 17554 (Stockholm herb., type).

The plant was designated by the collector as a new genus, the name being still unpublished. There are no apparent characters by which it may be distinguished from *Oldenlandia*. It bears no close resemblance to any species reported from South America, but in habit and general appearance the plant suggests *Houstonia procumbens* (Walt.) Standl., of the southeastern United States.

The genus *Oldenlandia* has not been recorded as a member of the flora of Peru. Two of the commonest species of the genus have been collected there recently:

Oldenlandia corymbosa L. Sp. Pl. 119. 1753.

Peru: Mishuyacu, Dept. Iquitos, 100 m., in clearing, *Klug* 502, 1161.

Oldenlandia herbacea (L.) DC. Prodr. 4: 425. 1830. *Hedyotis herbacea* L. Sp. Pl. 102. 1753.

Peru: Caballo Cocha, Dept. Loreto, in cleared land, August, 1929, *Williams* 2297.

Creatantha, gen. nov.—Arbores; folia opposita petiolata ampla membranacea; stipulae intrapetiolares profunde bifidae breviter connatae; inflorescentia terminalis paniculata thyrsioidea e cymis composita, floribus speciosis albis bibracteolatis actinomorpha hexameris; calyx brevissimus cupularis truncatus intus eglandulosus; corolla latissime infundibuliformis campanulata crasse carnosa extus glabra, tubo latiore quam longus intus dense villosus, lobis 6 oblongo-ovatis obtusis intus infra apicem dense barbatis aestivatione valvatis vel leviter imbricatis tubo paullo longioribus patentibus vel recurvis; stamina basi tubi inserta vix exserta, antheris sessilibus oblongis acutiusculis basi integris plus minusve corrugatis prope basin affixis; ovarium 3-loculare, ovulis numerosis placentae angulo interiore loculi affixae adnatis anatropis; stylus brevis filiformis glaber apice in ramos 2 breves carnosos divisus; bacca globosa calyce persistente coronata 3-locularis; discus paullo elevatus annularis integer; semina numerosissima minuta irregulariter polyedra minute foveolata.

Type species, *Creatantha peruviana* Standl.

Creatantha peruviana, sp. nov.—Arbor 6-9-metralis, ramulis crassis breviter denseque griseo-pilosulis; stipulae 2 cm. longae fere ad basin bifidae extus sparse puberulae, laciniis anguste lanceolato-oblongis acuminatis; petiolus gracilis subteres 8.5-10 cm. longus puberulus vel glabratus; lamina elliptica 34-37 cm. longa 15-19 cm. lata apice obtusa et breviter abrupte caudato-acuminata, acumene 1.5 cm. longo longe attenuato, basi acuta vel abrupte contracta et breviter decurrens, supra viridis, glabra vel tantum ad venas sparse et obscure puberula, sublucida, costa venisque vix elevatis, subtus pallidior, albida, ubique dense minute puberulo-tomentella vel serius glabrata, costa crassa elevata, nervis lateralibus utroque latere c. 25 angulo fere recto vel interdum multo angustiore abeuntibus gracilimis prominentibus fere rectis juxta marginem conjunctis, nervulis inconspicuis laxe reticulatis; inflorescentia (imperfecta tantum visa) 26 cm. longa et ultra, basi 16 cm. lata, supra paullo angustata, rhachi crassissima striata sparse minute puberula, ramis numerosis solitariis vel fasciculatis compressis sparse puberulis, bracteis linearisubulatis vel linearibus usque ad 4 cm. longis, bracteolis minutis late triangulari-ovatis acutis puberulis et ciliolatis, cymis laxe pauci-

vel multifloris, flore terminali sessili, aliis 2-5 mm. longe pedicellatis; hypanthium obconicum basi acutum 8 mm. longum et aequilatum fere glabrum, calyce c. 2 mm. alto; corolla in alabastro apice rotundata tubo c. 5 mm. longo et 10 mm. lato extus tomentello vel glabrato, lobis crassissimis c. 8 mm. longis extus glabris; antherae c. 6 mm. longae et 2 mm. latae; stylus c. 4 mm. longus; baccae globosae 8 mm. diam. glabrae basi et apice rotundatae; semina pallide rubro-brunnea fere 1 mm. diam.—Peru: Edge of woods, Puerto Yessup, Dept. Junín, alt. 400 m., July 10-12, 1929, *E. P. Killip and A. C. Smith 26331* (Herb. Field Mus. No. 607,555, type).

This new genus is one regarding whose systematic position there is no doubt. It is related only to *Isertia*, whose species it resembles closely in foliage and form of the inflorescence, as well as in most flower details. The relationship evidently is very close, but the corolla in the present plant is so different from that of the genus *Isertia* that this Peruvian tree can not be referred to *Isertia*, if any importance is to be attached to the characters used commonly in the Rubiaceae for separating genera. In *Isertia* the corollas are very long, slender, and tubular, with very short and spreading lobes, while in *Creatantha* the extraordinarily broad tube is even shorter than the lobes. The stamens in *Isertia* are inserted at the top of the tube, and in *Creatantha* at the base of the tube, but probably in the latter case they are quite as close to the mouth of the tube as in *Isertia*, and this character therefore is one of no importance.

In connection with the description of this new genus it is pertinent to discuss the status of the genera *Isertia* and *Cassupa*, about which the writer long has entertained doubt. According to most authorities, *Isertia* has a 4-6-celled berry and imbricate corolla lobes, while in *Cassupa* the berry is 2-celled and the corolla lobes are valvate. In some recently described species of *Cassupa* the ovary is known to be either 2- or 3-celled. After careful examination of corollas and buds of the plants referred to the two genera, I am unable to see any essential differences in estivation. All the plants referred to the two genera are exactly similar in general appearance, and all or most of the species, in fact, are separated with more or less difficulty. In view of the variation and relative unimportance of the supposedly distinguishing characters, and especially on account of the similarity in aspect of all the plants concerned, it seems best to unite these two genera, under the older name, *Isertia*. The species of *Cassupa* listed below are, therefore, transferred to *Isertia*. It is probable that when more ample material of them is available, some of the *Cassupa* species will be found to be synonymous with others described under *Isertia* or vice versa, or else they can be maintained only by the

artificial character of the number of ovary cells, which very likely is variable upon the same plant.

Isertia alba (Schum. & Krause), comb. nov. *Cassupa alba* Schum. & Krause, Bot. Jahrb. Engler 40: 322. 1908. *C. alba* Schum. in E. & P. Nat. Pfl. 4⁴: 63. 1891, nomen.

Isertia juruana (Schum. & Krause), comb. nov. *Cassupa juruana* Schum. & Krause, Bot. Jahrb. Engler 40: 148. 1907, nomen; Verh. Bot. Ver. Brandenb. 50: 97. 1908.

Isertia panamensis (Standl.), comb. nov. *Cassupa panamensis* Standl. Contr. U. S. Nat. Herb. 18: 135. 1916.

Isertia Pittieri (Standl.), comb. nov. *Cassupa Pittieri* Standl. Contr. U. S. Nat. Herb. 17: 445. 1914.

Isertia scarlatina (Schum. & Krause), comb. nov. *Cassupa scarlatina* Schum. & Krause, Bot. Jahrb. Engler 40: 148. 1907, nomen; Verh. Bot. Ver. Brandenb. 50: 98. 1907.

Isertia verrucosa (H. & B.), comb. nov. *Cassupa verrucosa* H. & B. Pl. Aequin. 1: 43. pl. 12. 1808.

Coccocypselum hirsutum Bartl. ex DC. Prodr. 4: 396. 1830.

Although this species has been recorded from Bolivia, and ranges northward to Central America and Mexico, it has not been reported from Peru. The following collection attests its occurrence in that country: Peru: Moyobamba, San Roque, Dept. San Martín, alt. 1,350–1,500 m., January 11, 1930, *Williams 7307*. Vernacular name, "sapu-quina."

Coccocypselum glabrifolium Standl. Field Mus. Bot. 8: 165. 1930.

Several additional collections of this recently described species have come to hand lately: Brazil: Prov. Minas Geraes, *Saint-Hilaire 459* (Herb. Paris), *487* (Herb. Paris). Prov. Rio de Janeiro, *Saint-Hilaire 459* (Herb. Paris). State of Rio de Janeiro, *Glaziov 17080* (Herb. Kew.), *8744* (Herb. Kew.). Jaguariahyva, Paraná, in rupibus campestribus, alt. 730 m., December 8, 1910, *P. Dusén 11321* (Stockholm herb.).

Coccocypselum pumilio, sp. nov. —Herba prostrata ramosa, caulibus gracillimis pilis longis laxis patentibus multicellularibus saepe purpureis dense villosis, internodiis brevibus vel saepe foliis longioribus; stipulae minutae subulatae deciduae; folia petiolata opposita, petiolo c. 2 mm. longo villosa; lamina membranacea orbicularis vel rotundato-ovata 6–9 mm. longa et fere aequilata apice rotundata vel obtusissima basi late rotundata vel truncata utrinque

pilis longis patentibus multicellularibus satis dense villosa, subtus purpurascens vel viridis, costa elevata gracili, nervis lateralibus utroque latere c. 4 angulo acuto adscendentibus arcuatis; flores ad axillas solitarii sessiles vel subsessiles; hypanthium obovoideum c. 1 mm. longum hispidulum; calyx 4-partitus, laciniis ovali-oblongis 2 mm. longis obtusis hispidulis erectis corollam semiaequantibus; corolla extus sparse hispidula 6 mm. longa, lobis 4 obtusis elliptico-ovatis tubo crasso fere duplo longioribus; semina numerosa orbicularia fere 1 mm. lata subcompressa fusco-brunnea minute puncticulata.—Brazil: Jaguariahyva, State of Paraná, in campo arenoso humidiusculo, October 23, 1911, *P. Dusén 13283* (Stockholm herb., type).

Rather closely related to *C. uniflorum* Hassler, but in that species the petioles are relatively longer, and the pubescence of the leaves and branches consists of much shorter and more slender hairs of quite different appearance.

Hippotis albiflora Karst. Fl. Columb. 1: 33. *pl.* 17. 1858.

Of this species only the type has been reported. One other collection has come to hand recently, but unfortunately its label bears no definite locality data: Colombia: In 1851–57, *Triana 3297* (Herb. Paris).

Pentagonia subauriculata, sp. nov.—Frutex; folia sessilia papyracea elliptico-obovata c. 70 cm. longa et 30 cm. lata, breviter acuminata, acumine triangulari acuto, infra medium subcontracta et basin versus angustata, basi ipsa anguste cordata, supra glabra, costa venisque prominentibus, subtus paullo pallidior, praesertim ad venas pilis gracillimis sparse adpresso-pilosa, costa crassiuscula elevata, nervis lateralibus utroque latere c. 19 angulo latiusculo adscendentibus prominentibus gracilibus fere rectis juxta marginem conjunctis, marginem versus ramulos 1–2 curvos emittentibus, nervulis transversis obscuris, inter nervulos creberrime striolata; flores sejuncti tantum visi, “bracteis rubris”; hypanthium obovoideum 5 mm. longum puberulum; calyx spathaceus 2.25 cm. longus sparse puberulus vel glabratus, uno latere profunde fissus, altero breviter bifidus, vel post anthesin aequaliter bilobus, lobis lanceolato-oblongis acutis usque ad 1 cm. latis; corolla alba extus glabra, tubo crasso 3 cm. longo supra paullo sensimque dilatato ore c. 8 mm. lato, lobis ovato-triangularibus acutiusculis c. 7 mm. longis.—Peru: In dense forest, Santa Rosa, lower Río Huallaga below Yurimaguas, Dept. Loreto, alt. 135 m., September 1–5, 1929, *E. P. Killip and A. C. Smith 28959* (Herb. Field Mus. No. 613,692, type).

Evidently an ally of *P. spathicalyx* Schum., which occurs in the same general region, but in that species the leaves are long-petiolate and the blades acute at the base.

Pentagonia velutina, sp. nov.—Frutex vel arbuscula; folia ut videtur petiolata; lamina papyracea late obovata vel oblongo-obovata

40–45 cm. longa 19–26 cm. lata acuta versus basin paullo angustata, basi ipsa acuta, supra glabra, costa venisque elevatis, subtus paullo pallidior, densissime velutino-pilosula, costa crassa elevata, nervis lateralibus utroque latere c. 13 angulo acuto adscendentibus elevatis fere rectis marginem attingentibus, prope marginem ramulos 1–2 emittentibus, inter nervos primarios creberrime striolata; baccae sessiles globosae 2 cm. diam. glabratae basi et apice rotundatae; calyx ad apicem baccae persistens 1.5–2 cm. longus subspathaceus bilobus, lobis oblongis acutis; cetera ignota.—Peru: In forest, Puerto Arturo, Yurimaguas, lower Río Huallaga, Dept. Loreto, alt. 155–210 m., November 21, 1929, *Llewelyn Williams 5280* (Herb. Field Mus. No. 614,357, type); November 15, 1929, *Williams 5046*.

Each specimen consists of a single leaf from which the petiole has been cut, with a few loose fruits. The material, however, is sufficient to show that the plant is distinct from all the other South American species of *Pentagonia*. It is distinguished primarily by the soft and dense pubescence of the lower leaf surface. *P. Williamsii* Standl., recently described from Pebas, has similar pubescence, but in that the leaves are long and narrow and have more numerous nerves.

***Sabicea ambigua* Standl.** Field Mus. Bot. 7: 49. 1930.

The species was based upon *Triana 1847* in the Kew herbarium, whose label did not give the locality at which the plant was collected. In the Paris herbarium there is a specimen of the same collection with locality data, also a second collection of the species: Colombia: Prov. Chocó and Barbacoas, *Triana 1847*; also *No. 1848*. Vernacular name, “yerba de maleficio.”

***Bertiera guianensis* Aubl.** Pl. Guian. 180. pl. 69. 1775.

In the enumeration of the Rubiaceae of Colombia a single specimen of this species was listed. Another may now be reported: Colombia: Villavicencio, 400 m., *Triana 1844* (Herb. Paris).

***Hamelia grandiflora* Spruce ex Wernham,** Journ. Bot. 49: 209. 1911.

Heretofore the species has been known only from Ecuador, but it may be reported now from Colombia: Prov. de Chocó et Barbacoas, 75 m., 1851–57, *J. Triana 1759* (Herb. Paris). Some of the corollas are as much as 3.8 cm. long.

***Hoffmannia Dusenii*, sp. nov.**—Frutex (?), ramulis crassis subteretibus glabris vel sparse praesertim ad nodos ferrugineo-villosulis, internodiis brevibus vel elongatis; stipulae caducae; folia opposita longe petiolata, petiolo crassiusculo 2.5–10 cm. longo sparse villosulo vel glabrato; lamina membranacea elliptica vel oblongo-

elliptica 13–23 cm. longa 6–11.5 cm. lata abrupte acuta vel acuminate, acumine angusto attenuato acuto, basi abrupte acuta vel interdum contracta et longiuscule decurrens, supra laete viridis, glabra vel primo sparse villosula, costa nervisque non elevatis, subtus multo pallidior, ubique raphidibus pallidis brevibus dense conspersa, ad costam venasque ferrugineo-villosula vel adpresso-villosula, costa crassa prominente, nervis lateralibus utroque latere c. 12 prominulis gracilibus angulo lato adscendentibus arcuatis, nervulis prominulis paucis laxe reticulatis; flores ad nodos cymoso-fasciculati, cymulis densis paucifloris sessilibus vel brevissime pedunculatis, floribus vulgo 1–2 mm. longe pedicellatis; hypanthium oblongo-campanulatum 3–4 mm. longum sparse villosulo-puberulum; calyx 4-partitus, laciniis suberectis 4–5 mm. longis lineari-attenuatis sparse villosulis vel glabris persistentibus; corolla extus sparsissime villosula c. 9 mm. longa in alabastro attenuata fere ad basin 4-loba, lobis anguste lanceolatis attenuatis intus glabris; antherae lineares 4–5 mm. longae; stylus gracilis glaber c. 8 mm. longus; baccae immaturae late oblongae 7–8 mm. longae.—Brazil (Paraná): Desvio Ypiranga, in silvis primaevis, October 31, 1914, *P. Dusen* 15792 (Herb. Stockholm, type). Ponta Grossa, Capão, in umbrosis ad rivulum, January, 1909, *Dusen* 7519 (S). Porto de Cima, in silva primaeva ad terram, October, 1908, *Dusen* 6925 (S).

Only one other species, *Hoffmannia Peckii* Schum., is reported from Brazil, and it differs clearly from the present plant in having glabrous leaves and short calyx lobes. Schumann described in the *Flora Brasiliensis* a var. *Selloana*, based upon *Sello* 4272 from Brazil, which may well be the same as *H. Dusenii*. I have seen no material of that variety, which is said by its author to be based upon imperfect material, and it seems better to give the present plant a new name, rather than raise the doubtful variety to specific rank.

Posoqueria palustris Mart. *Flora* 24: Beibl. 2: 77. 1841.

Brazil: Province of Rio de Janeiro, 1816–21, *Saint-Hilaire* 233 (Herb. Paris).

Tocoyena Williamsii, sp. nov.—Arbor mediocris, ramulis crassis subcompressis ochraceis glabris; stipulae deciduae; folia breviter petiolata opposita. petiolo 1–2 cm. longo gracili glabro; lamina chartacea elliptico-obovata 15–34 cm. longa 7.5–16 cm. lata acuta vel breviter acuminate, acumine obtuso, basi cuneato-acutâ, glabra, in sicco nigrescens, supra lucida, costa venisque prominentibus, subtus concolor, lucida, costa gracili elevata, nervis lateralibus utroque latere c. 11 angulo semirecto abeuntibus gracilibus prominentibus fere rectis prope marginem conjunctis, nervulis obscuris; inflorescentia terminalis cymosa dense multiflora breviter pedunculata glabra, corollis neglectis 5 cm. lata, ramulis crassis, bracteis obsoletis vel caducis, floribus sessilibus vel brevissime et crassissime pedicellatis; hypanthium obovoideo-oblongum 4.5–5 mm. longum basi angus-

tatum, calyce aequilato 2–2.5 mm. longo truncato; corolla in alabastro obtusissima, tubo gracili 9–9.5 cm. longo 2.5 mm. crasso, lobis 6 reflexis obovatis vel late ellipticis c. 12 mm. longis apice obtusis vel rotundatis intus glabris; antherae sessiles ad orem tubi insertae anguste oblongo-lanceolatae 4.5 mm. longae; bacca globosa basi et apice late rotundata 7 cm. diam. — Peru: Iquitos, Dept. Loreto, alt. 120 m., April 1, 1930, *Llewelyn Williams 8097* (Herb. Field Mus. Nos. 614, 658–59, type).

Related to *T. Sellowiana* (C. & S.) Schum., of Brazil, but that species is distinguished immediately by its small leaves with few lateral nerves.

Tocoyena amazonica, sp. nov.—Frutex vel arbuscula, ramulis gracilibus, vetustioribus pallide fusco-brunneis, novellis in sicco subcompressis fuscis sparse minute puberulis vel subglabris; stipulae 4 mm. longae ovato-triangulares subpersistentes mucronato-acutae minute adpresso-pilosulae vel glabratae; folia breviter petiolata opposita, petiolo gracili 8–18 mm. longo puberulo vel glabrato; lamina membranacea in sicco nigrescens elliptico-oblonga vel oblanceolato-oblonga 11–21 cm. longa 3–7.5 cm. lata longe acuminata, acumine angusto longe attenuato, basin versus longe attenuata, supra sublucida, sparse et minutissime puberula vel glabra, costa venisque prominulis, subtus paullo pallidior, tantum ad venas minutissime puberula vel fere glabra, costa gracili elevata, nervis lateralibus utroque latere c. 11 angulo semirecto vel paullo latiore abeuntibus gracillimis prominulis fere rectis prope marginem conjunctis, nervulis inconspicuis prominulis laxo reticulatis; inflorescentia terminalis, floribus ut videtur ad apices fasciculatis paucis crasse 8 mm. longe pedicellatis; bacca globosa 2 cm. longa glabra basi et apice rotundata costata, seminibus numerosis magnis; calyx ad apicem baccae persistens 4 mm. longus dentibus late triangularibus acutis.—Peru: Río Masana, along the Río Itaya, Dept. Loreto, May 2, 1929, *Llewelyn Williams 21* (Herb. Field Mus. No. 601,947, type). Pebas, on the Amazon River, Dept. Loreto, in forest, July 27, 1929, *Williams 1811*.

From *T. Williamsii* this differs in its small leaves of different texture, and its smaller fruits and sparse pubescence. Without flowers it is not quite certain that the plant really belongs to the genus *Tocoyena*, but it seems to fit there better than in the other related genera.

Tocoyena Sprucei, sp. nov.—Arbor parva vel frutex, ramulis crassis ochraceis vel ferrugineis subteretibus, novellis dense puberulis vel subtomentosis, interdum fere glabris, internodiis abbreviatis; stipulae deciduae, non visae; folia brevissime petiolata crasse membranacea opposita, petiolo c. 1 cm. longo crasso; lamina late elliptica, elliptico-ovalis, fere rotundata vel obovato-rotundata, 9–19 cm. longa, 5–14 cm. lata, apice late rotundata vel obtusa, rare acuta, basi late rotundata vel obtusa et vulgo abrupte contracta et decurrens,

supra in sicco fusca, glabra vel tantum ad venas puberula, leviter bullata, venis plus minusve impressis, subtus multo pallidior, discolor, ad venas saepe dense minute puberula vel fere omnino glabra, costa gracili elevata, nervis lateralibus utroque latere c. 9 angulo semirecto adscendentibus irregularibus leviter arcuatis vel fere rectis gracillimis prominentibus prope marginem conjunctis, nervulis conspicuis laxe reticulatis; inflorescentia terminalis cymosa sessilis pauci- vel multiflora densa, ramis dense ferrugineo-puberulis vel glabratis, floribus sessilibus vel usque ad 4 mm. longe pedicellatis, bracteis caducis; hypanthium oblongum vel obovoideum 5-6 mm. longum glabrum basi angustatum; calycis tubus 3-4 mm. longus et 4-5 mm. latus, dentibus vix 1 mm. longis acutis triangularibus vel depresso-triangularibus remotis glabris; corolla gracilis extus glabra in alabastro obtusa, tubo 8.5-11.5 cm. longo 3-4 mm. lato fauce vix dilatato ore villosulo, lobis 5 ovalibus vel rotundato-ovatis 10-14 mm. longis apice rotundatis intus dense puberulis patentibus; antherae lineari-oblongae 6-7 mm. longae semiexsertae; bacca late ovalis glabra 3-3.5 cm. longa et 2.5 cm. lata, basi et apice rotundata; semina numerosa magna compressa.—Brazil: Santarem, high campos, November, 1849, in fruit, *R. Spruce 358* (Herb. Kew., type). Santarem, in 1851, in fruit, *Spruce 358* (Herb. Kew.). Serra de Araripa, January, 1839, *Gardner 1964* (Herb. Kew.).

According to Spruce's notes, the plant is a small tree with rough bark; flowers ochre-yellow; fruit yellow when ripe. Gardner describes it as a shrub about 2.5 m. high with yellow flowers.

Tocoyena Sprucei is a relative of *T. bullata* (Vell.) Mart. The latter has much more strongly bullate leaves which are copiously pubescent and usually much narrower than in the plant here described.

Sphinctanthus maculatus Spruce ex. Schum. in Mart. Fl. Bras. 6*: 356. 1888.

The genus *Sphinctanthus* has not been recorded from Peru, but several collections are now at hand from that country. The following material of this species is in the herbarium of Field Museum: Brazil: Between Barcellos and Santa Isabel, upper Amazon, December, 1851, *Spruce 1939* (photo. of type collection from Herb. Berol.).—Peru: Mouth of Río Santiago, *Tessmann 4229* (fragment from Herb. Berol.). Yurimaguas, lower Río Huallaga, Dept. Loreto, 155-210 m., a shrub in forest, *Williams 4730*. Huallaga, Yurimaguas, a shrub in forest, *Williams 4659*. Puerto Arturo, lower Río Huallaga, Dept. Loreto, a small shrub in pasture, *Williams 5198*. Balsapuerto, lower Río Huallaga basin, Dept. Loreto, 150-350 m., a shrub of 3-4.5 m., fruit orange, *Killip & Smith 28645*. Cahuapanas, on Río Pichis, Dept. Junín, 340 m., in dense forest, a shrub of 3-4.5 m., fruit yellow, *Killip & Smith 26729*.

Sphinctanthus Hasslerianus Chod. Bull. Herb. Boiss. II. 4: 179. 1904.

Paraguay: Colonia Risso prope Apa, in margine silvae minus densae, loco humidiusculo, September, 1892, G. A. Malme 982 (Herb. Stockholm). A branched shrub about 2 m. high; flowers yellow.

Randia calycina Cham. Linnaea 9: 246. 1834.

The plant has not been reported from Colombia, but the following collections appear to represent the species: Colombia: Tenasucá, Prov. Bogotá, *Triana* 3304 (Herb. Paris). Tenasucá, 1,000 m., *Triana* 1827 (Herb. Paris).

Randia aculeata L. Sp. Pl. 1192. 1753.

Colombia: Mariquita, Magdalena Valley, 600 m., *Triana* 1830 (Herb. Paris). San Miguel, Distrito de Piedras, Prov. Mariquita, *Triana* 3304 (Herb. Paris). Vernacular names, "maíz tostado," "cruceto."

Randia spinosa (Jacq.) Karst., var. **pubescens** (HBK.), comb. nov. *Mussaenda pubescens* HBK. Nov. Gen. & Sp. 3: 420. 1820. *Basanacantha spinosa* (Jacq.) Schum., var. *pubescens* Schum. in Mart. Fl. Bras. 6^e: 378. 1889.

Randia Tessmannii Standl. Field Mus. Bot. 4: 327. 1929.

Several additional numbers of this handsome plant have appeared in recent collections from Peru: Sapote Yacu, Santa Rosa, lower Río Huallaga, Dept. Loreto, 155–210 m., November, 1929, a shrub in forest, *Williams* 4929. Puerto Arturo, Yurimaguas, lower Río Huallaga, Dept. Loreto, 155–210 m., a shrub at edge of river, November, 1929, *Williams* 5249; a shrub in forest, *Williams* 5357.

The last specimen cited is in fruit. The fruit is globose, smooth, and 3 cm. in diameter.

Randia Killipii Standl. Field Mus. Bot. 8: 170. 1930.

Of this recently described species two additional collections may now be reported: Peru: Paraíso, Alto Río Itaya, Dept. Loreto, 145 m., a shrub in forest, October 3, 1929, *Williams* 3372. San Antonio, Alto Río Itaya, 145 m., October 9, 1929, *Williams* 3508.

Duroia hirsuta (Poepp. & Endl.) Schum. in Mart. Fl. Bras. 6^e: 367. 1889. *Amaioua hirsuta* Poepp. & Endl. Nov. Gen. & Sp. 3: 25. pl. 230. 1845.

Colombia: Villavicencio, 400 m., *Triana* 1843 (Herb. Paris). Llano de San Martín, Villavicencio, 450 m., January, 1856, *Triana* (Herb. Paris). Vernacular name, "turma de mico."

Duroia stenophylla, sp. nov.—Frutex bimetralis, ramulis crassiusculis in sicco fuscis et costatis dense pilis adscendentibus fulvis hirsutis; stipulae subpersistentes tenues brunnescentes oblongae 2–3 cm. longae obtusae extus dense adpresso-hirsutae; folia breviter petiolata opposita, petiolo crasso 8–12 mm. longo hirsuto; lamina crasse membranacea anguste oblanceolato-oblonga c. 17.5 cm. longa et 4–5 cm. lata abrupte caudato-acuminata, acumine c. 1 cm. longo angusto longe attenuato, basin versus longe sensim angustata, supra viridis, minute pallido-puncticulata, tantum ad venas hispida, costa venisque prominulis, subtus paullo pallidior, sparse vel ad costam dense hirsuta, costa gracili elevata, nervis lateralibus utroque latere c. 17 angulo lato saepe fere recto abeuntibus prominentibus gracilibus fere rectis prope marginem conjunctis, nervulis obscuris; inflorescentia terminalis cymoso-corymbosa 3 cm. longe pedunculata trichotoma, corollis neglectis 6 cm. latis, ramis primariis 1.5–2 cm. longis dense hirsutis apice dense cymose paucifloris, pedicellis dense hirsutis plerumque 3–6 mm. longis; hypanthium floris masculi breve, calyce profunde 6-fido, laciniis linearis-subulatis rigidis erectis 8 mm. longis dense hirtellis longe attenuatis; corolla in alabastro longe attenuata, tubo crassiusculo 13 mm. longo et 4 mm. lato sub orem paullo angustato dense sericeo ore glabro, lobis linearibus longe attenuatis c. 23 mm. longis intus glabris extus hirtellis.—Peru: Mishuyacu, near Iquitos, Dept. Loreto, alt. 100 m., in forest, December, 1929, *G. Klug* 699 (Herb. Field Mus. No. 612,578, type).

Evidently a relative of *D. hirsuta* (Poepp. & Endl.) Schum., which grows in the same general region, but in that the leaves are much broader, the branches are fistulose-thickened, and the proportions of the corolla are different.

Duroia trichocarpa, sp. nov.—Arbor mediocris, ramulis crassis ochraceis in sicco costatis dense hirsutis; stipulae non visae; folia petiolata opposita, petiolo crassiusculo dense hispido 1.5–3 cm. longo; lamina crasse membranacea elliptica vel late elliptica 14–26 cm. longa 6.5–16 cm. lata apice acuta et abrupte caudato-acuminata, acumine longe attenuato apice fere filiformi, basin versus paullo contracta et longe angustata vel basi obtusa, supra pallida, sparse breviterque hirsuta vel glabrata, costa venisque non elevatis, subtus fere concolor, sparse hirsuta, costa gracili elevata, nervis lateralibus utroque latere c. 10 angulo lato adscendentibus prominentibus gracilibus subarcuatis juxta marginem conjunctis, venulis prominulis laxo reticulatis; flores ad apices ramulorum dense capitato-conferti sessiles vel subsessiles numerosi; calyx dense ferrugineo-hirsutus profunde 6-fidus, laciniis linearibus suberectis usque ad 12 mm. longis; bacca obovoideo-globosa 3 cm. longa basi obtusa apice late rotundata et calyce persistente coronata, dense pilis longis patentibus brunnescentibus hirsuta.—Peru: San Antonio, Alto Río Itaya, Dept. Loreto, in forest, October 7, 1929, *Llewellyn Williams* 3470 (Herb. Field Mus. Nos. 614,392–93, type).

Amaioua urophylla, sp. nov.—Arbor 6-metralis, ramulis crassis fuscis striatis hirtellis vel glabratis, internodiis ut videtur brevibus; stipulae plus minusve persistentes 8–12 mm. longae ovato-triangulares acutae extus adpresso-pilosae fusco-ferrugineae; folia petiolata opposita, petiolo 1.5–3 cm. longo crasso supra sulcato breviter hirsuto vel glabrato; lamina coriacea oblongo-elliptica 10–20 cm. longa 5–7.5 cm. lata apice acuta vel obtusa et abrupte longeque caudato-acuminata, acumine lineari-attenuato basi dilatato 1–3.5 cm. longo, basi acuta vel rotundata, supra glabra, sublucida, costa venisque non elevatis, subtus fere concolor, ubique dense asperulo-puberula et ad venas adpresso-pilosula, costa gracili elevata, nervis lateralibus utroque latere c. 12 angulo c. semirecto abeuntibus gracilibus prominentibus leviter arcuatis prope marginem conjunctis, nervulis obscuris; inflorescentiae terminales solitariae vel geminatae crasse 2.5–4 cm. longe pedunculatae cymoso-umbellatae corollis neglectis c. 3 cm. latae dense pauciflorae, floribus masculis sessilibus vel subsessilibus, bracteis obsoletis; calyx hypanthio brevi adjecto 6–8 mm. longus basi obtusus dense hirtellus, margine breviter dentatus, dentibus late triangularibus obtusis vel acutis; corolla alba in alabastro linearis apicem versus paullo attenuata extus densissime sericea, tubo crassiusculo fere 3 cm. longo et 4 mm. crasso intus ad insertionem staminum dense piloso, lobis 6 linearibus aequilongis longe attenuatis carnosus intus glabris; antherae 1 cm. supra basin tubi insertae lineares 12 mm. longae apice mucronatae; stylus ramis adjectis 24 mm. longus glaber. —Peru: Mishuyacu, near Iquitos, Dept. Loreto, in forest, alt. 100 m., October–November, 1929, G. Klug 419 (Herb. Field Mus. No. 612,595, type).

The species is noteworthy for its very large flowers and for its long-caudate leaves.

Alibertia edulis A. Rich. Mém. Soc. Hist. Nat. Paris 5: 234. 1830.

Colombia: Llano de San Martín, 300 m., *Triana 1842* (Herb. Paris). Without locality, *Triana 3305* (Herb. Paris). Vernacular name, “perita.”

Alibertia Gardneri, sp. nov.—Frutex parvus dense ramosus, ramulis gracilibus rigidis subteretibus ferrugineis dense minute puberulis, internodiis plerumque abbreviatis; stipulae subpersistentes erectae ferrugineae e basi triangulari subulato-attenuatae puberulae; folia crasse coriacea petiolata opposita, petiolo crassiusculo 2–6 mm. longo minute puberulo; lamina elliptico-oblonga vel anguste elliptica 3–5.5 cm. longa 1.2–2.5 cm. lata apicem versus paullo attenuata, apice ipso obtuso, basi acuta, supra fusca vel viridiuscula lucida glabra, costa paullo elevata, venis manifestis saepe pallidis non elevatis, subtus pallidior, ubique dense minute puberula, costa gracili elevata, nervis lateralibus utroque latere c. 7 angulo c. semirecto adscendentibus fere rectis gracilibus prominentibus prope marginem conjunctis, nervulis inconspicuis laxe reticulatis; flores masculi

terminales sessiles aggregati numerosi; calyx late campanulatus fere 1 mm. longus truncatus vel obsolete remoteque denticulatus extus dense minute puberulus, discum vix duplo superans; corolla extus glutinosa et sparse minute puberula, tubo crasso 4.5 mm. longo 1.5 mm. crasso fauce nudo, lobis 4 rotundatis patentibus 1-1.2 mm. longis apice rotundatis et interdum minute apiculatis intus glabris.—Brazil: Woods near Oeiras, Piauhy, June, 1839, *Gardner 2460* (Herb. Kew., type).

Alibertia Gardneri is a close relative of *A. rigida* Schum., the latter being well distinguished, however, by its broader and more rigid leaves, broadly rounded at the apex and sessile or almost so.

Kotchubaea sericantha, sp. nov.—Arbor 12-metralis, ramulis crassis fusco-ferrugineis subteretibus glabris, internodiis plerumque 1.5-2.5 cm. longis; stipulae persistentes erectae et adpressae ferrugineae glabrae late triangulares basi breviter connatae c. 13 mm. longae acutiusculae; folia breviter petiolata opposita coriacea, petiolo crasso 1.5-2 cm. longo; lamina obovata vel obovato-oblonga 14-21 cm. longa 7-10 cm. lata apice obtusa vel rotundata et abrupte breviterque apiculata, acumine c. 6 mm. longo obtuso, basin versus longe sensim attenuata vel basi acuta, supra glabra, interdum lucida, costa elevata, venis vix elevatis, subtus fere concolor, glabra vel parcissime scaberula, costa crassiuscula elevata, nervis lateralibus utroque latere c. 12 angulo lato adscendentibus gracilibus prominentibus fere rectis prope marginem conjunctis, nervulis inconspicuis; flores masculi ad apices ramorum fasciculati pauci vel in cymulas terminales umbelliformes paucifloras dispositi, pedicellis rigidis 1-2 cm. longis glabris vel obscure scaberulis; calyx anguste campanulatus extus glaber 10-13 mm. longus truncatus intus densissime sericeo-pilosus; corolla alba extus densissime sericea, tubo 5.5-7 cm. longo 3.5-7 mm. crasso fauce paullo ampliata et usque ad 1 cm. lato, laciniis 8-10 linearibus intus dense tomentulosis 2.5-4 cm. longis patentibus attenuatis.—Peru: Mishuyacu, near Iquitos, Dept. Loreto, alt. 100 m., in forest, April, 1930, *G. Klug 1260* (Herb. Field Mus. No. 622,220, type); also No. 1128, with the same data.

Only a single species of *Kotchubaea* has been described previously, *K. insignis* Fisch., which is known from northern Brazil and from French Guiana. It differs from *K. sericantha* in having the corolla tube glabrous on the outer surface.

Retiniphyllum adinanthum, sp. nov.—Arbuscula 3-metralis, ramulis crassiusculis obtuse tetragonis ochraceis sparse lenticellatis glabris; stipulae non visae; folia breviter petiolata opposita, petiolo gracili glabro 2 cm. longo; lamina firme membranacea oblongo-elliptica c. 27 cm. longa et 11.5 cm. lata, apice subrotundato abrupte cuspidato-acuminata, acumine anguste triangulari 1.5 cm. longo obtuso, basi acuta, glabra, supra viridis, costa venisque elevatis, nervulis prominulis, subtus pallidior, costa gracili elevata, nervis

lateralibus utroque latere c. 12 angulo lato adscendentibus pallidis gracilibus prominentibus fere rectis prope marginem conjunctis, nervulis prominulis reticulatis; inflorescentia terminalis spicata 2.5 cm. longe pedunculata 13.5 cm. longa c. 12 mm. lata, rhachi crassiuscula minute puberula, floribus in glomerulos 0.5-2.5 cm. distantes dense multifloros oppositos calyculo dense minute puberulo lato truncato 3.5 mm. lato et 2 mm. alto involucratos aggregatis, glomerulorum paribus bractea breviter vaginante patelliformi subtectis, floribus arcte sessilibus; hypanthium minutum vix 0.6 mm. longum, calyce campanulato minutissime puberulo 2.2 mm. longo obsolete denticulato; corolla alba in alabastro obtusa extus densissime et pallide puberulo-tomentella, tubo cylindraceo 4.5 mm. longo, lobis 5 patentibus anguste oblongis obtusis 3.5 mm. longis; stamina prope basin tubi inserta, filamentis brevissimis, antheris linearibus; cetera ignota.—Peru: In clearing, Mishuyacu, near Iquitos, Dept. Loreto, alt. 100 m., February-March, 1930, *G. Klug* 988 (Herb. Field Mus. No. 612,612, type).

The generic position of this plant is very uncertain, and I doubt that it belongs in the genus *Retiniphyllum*, but it has been impossible to refer it more satisfactorily to any other genus. The flowers are so immature that it is impossible to determine the character of the fruit.

***Retiniphyllum Kuhlmannii*, sp. nov.**—Arbor, ramulis gracilibus fuscis subteretibus glabris; folia petiolata opposita coriacea, petiolo 9-13 mm. longo crassiusculo glabro; lamina late elliptica usque ad elliptico-oblonga 5-8.5 cm. longa 3.5-5 cm. lata abrupte acuta vel acutiuscula, acumine latissime triangulari obtuso, basi rotundata usque ad acuta, glabra, supra in sicco fusca, costa impressa, venis vix elevatis, subtus pallidior, costa gracili elevata, nervis lateralibus utroque latere c. 15 gracillimis vix prominulis fere rectis remote a margine conjunctis, nervulis vix prominulis laxe reticulatis; inflorescentia terminalis spicata laxe multiflora prope basin interrupta 3 cm. longe pedunculata, 12 cm. longa, rhachi glabra, floribus arcte sessilibus; bracteae cum bracteolis in cupulam brevissimam truncatam connatae; hypanthium glabrum 1.5 mm. longum, calyce tubuloso 3-3.5 mm. longo 2 mm. lato brevissime remote denticulato, dentibus triangularibus acutis erectis; corolla pallide rosea in alabastro acutiuscula extus densissime sericea, tubo gracili supra paullo dilatato 1 cm. longo, lobis lineari-lanceolatis 6-7 mm. longis patentibus vel subreflexis attenuatis intus dense sericeis; filamenta lacinias corollae aequantia dense adpresso-pilosa; stylus adpresso-pilosus gracilis longe exsertus.—Brazil: Rio Verde, Chapadão, Matto Grosso, in swamps, April, 1918, *J. G. Kuhlmann* 2343-K (Herb. Berol., type).

Referable to the subgenus *Commianthus*, and related to *R. discolor* (Spruce) Muell. Arg. and *R. pallidum* Muell. Arg., both of which were collected along the Rio Negro.

Erithalis fruticosa L.—This common species of the West Indies is known in Mexico only from Yucatan, and in Central America it probably is unknown except on some of the islands off the coast. A recent collection permits its report as a member of the flora of British Honduras: All Pines, edge of mangrove swamp, August, 1930, W. A. Schipp 583; a shrub 1 m. high with white flowers and black fruits; occasional.

Machaonia grandis Wernham, Journ. Bot. 51: 220. 1913.

The species was based upon *Triana 1625*. The following collection, although distributed under another number, is perhaps a duplicate of the type: Colombia: Provincias de Chocó and Barbacoas, April, 1853, *Triana 3135* (Herb. Paris).

Machaonia Williamsii, sp. nov.—Frutex vel arbuscula, ramulis gracilibus rigidis dense velutino-pilosulis ochraceis, internodiis plerumque 2–4.5 cm. longis; stipulae erectae persistentes puberulae 2.5–3.5 mm. longae e basi latissima subulato-attenuatae; folia petiolata opposita, petiolo gracili 6–11 mm. longo dense pilosulo; lamina membranacea oblongo-elliptica vel ovato-elliptica 5–9.5 cm. longa 2–3.7 cm. lata sensim vel abrupte acuminata, acumine acuto, basi acuta vel subobtusula, interdum abrupte contracta et breviter decurrens, supra viridis, dense breviterque asperulo-pilosula, costa venisque subimpressis, subtus paullo pallidior, dense pilis albidis patentibus velutino-pilosula, costa gracili elevata, nervis lateralibus utroque latere c. 8 angulo acuto adscendentibus gracilibus prominentibus arcuatis prope marginem conjunctis; inflorescentia terminalis cymoso-paniculata 2–5 cm. longe pedunculata dense multiflora rotundato-pyramidalis 2.5–10.5 cm. longa et 3.5–11 cm. lata, ramulis densissime patenti-pilosulis, bracteis brevibus linearibus vel subulatis, floribus dense congestis sessilibus vel brevissime pedicellatis; hypanthium oblongo-obovoideum c. 1 mm. longum dense allopilosulum; calyx 5-partitus, laciniis c. 0.8 mm. longis late ovatis vel ovalibus apice obtusis vel rotundatis sparse minute pilosulis; corolla in alabastro apice late rotundata extus glabra 2.5–3 mm. longa; fructus cuneato-obovatus 3–3.3 mm. longus albido-puberulus subcompressus basim versus paullo angustatus apice obtusus calyce persistente coronatus.—Peru: Juan Guerra, near Tarapoto, Dept. San Martín, alt. 360–900 m., December 30, 1929, *Llewellyn Williams 6886* (Herb. Field Mus. No. 614,632, type). Río Mayo, Tarapoto, in forest, December, 1929, *Williams 6255, 6248, 6246*.

From Peru there has been reported only a single species of this genus, *Machaonia peruviana* Wernham, whose type was collected by Pavón at some unknown locality, perhaps even in Ecuador. That is described as having glabrate leaves and narrowly lanceolate calyx lobes. *M. Williamsii* is closely related to *M. acuminata* H. & B.,

which ranges from Brazil to Ecuador and Central America, but in that the fruits are much longer (5–6 mm.) than in *M. Williamsii*.

Guettarda sericea Muell. Arg. Flora 58: 450. 1875.

Paraguay: Espinillar, Bco. Branco, October, 1895, *J. D. Anisits* 2236 (Herb. Stockholm); a shrub 2–3 m. high. The collection represents a great extension of range for the species, reported heretofore from Bahia. The Paraguay specimens seem to differ in no important respect from northern material, although the leaves are somewhat smaller and have a more dense pubescence on the lower surface.

Guettarda colubrinoides, sp. nov.—Ramuli graciles teretes fusco-ferruginei, novellis sparse strigosis, internodiis elongatis; stipulae deciduae, non visae; folia petiolata opposita magna firme membranacea, petiolo gracili 2–3.2 cm. longo dense adpresso-pilosulo vel serius glabrato; lamina ovalis vel ovali-elliptica 13–15.5 cm. longa 8–10 cm. lata apice acuta vel breviter acute acuminata basi lata leviter vel profunde cordata, supra fusco-olivacea, tantum ad venas puberula, aliter glabra, costa venisque prominulis, subtus paullo pallidior, ad venas sparse subadpresso-pilosa, inter venas minutissime sparseque strigillosa, costa gracili elevata, nervis lateralibus utroque latere c. 9 angulo semirecto vel angustiore adscendentibus gracillimis prominentibus arcuatis prope marginem conjunctis, nervulis prominulis pallidis laxè reticulatis; inflorescentiae cymosae axillares solitariae vel ob internodia abbreviata spurie aggregatae dense pauciflorae c. 1 cm. latae 1 cm. longe vel brevius pedunculatae, pedunculo dense adpresso-pilosulo, floribus arcte sessilibus, bracteis magnis ellipticis vel oblongis brunnescentibus obtusis extus sparse sericeis calyce multo longioribus; hypanthium subglobosum fere 1 mm. longum densissime ochraceo-pilosulum; calyx tubulosus 1.7 mm. longus ferrugineus sparse puberulus truncatus, in anthesi saepe inaequaliter fissus; corolla extus minute cinereo-sericea, tubo gracillimo 13 mm. longo 1 mm. crasso supra vix dilatato, lobis 4 patentibus 3 mm. longis oblongis obtusis intus glabris; antherae oblongae semiexsertae.—Mexico: Paso del Carrizal, Tabasco, May 4, 1890, *J. N. Rovirosa* 787 (Herb. Kew., type).

Among the few Mexican species of the genus, this is set apart by the very large, thin, nearly glabrous leaves, which are conspicuously cordate at the base.

Guettarda sabiceoides Standl. Field Mus. Bot. 4: 289. 1929.

Colombia: Prov. Barbacoas, Río Patio, April, 1853, *Triana* 3192 (Herb. Paris).

Guettarda hirsuta (R. & P.) Pers. Syn. Pl. 1: 200. 1805. *Laugeria hirsuta* R. & P. Fl. Peruv. 2: 22. pl. 45, f. 2. 1799.

Ecuador: At the base of Mount Chimborazo, 1,200 m., September, 1860, *R. Spruce 6225* (Herb. Kew.). A tree 9 m. high; corolla sordid-violaceous, the limb white.

Guettarda rhamnifolia, sp. nov.—Ramuli crassi teretes, internodiis valde abbreviatis plerumque 2–3 mm. longis dense adpresso-pilosis; stipulae deciduae rotundato-ovatae 5–6 mm. longae pallidae cuspidato-apiculatae extus dense adpresse ochraceo-pilosae; folia petiolata subcoriacea mediocria opposita, petiolo crasso 8–12 mm. longo dense subadpresse ochraceo-hispidulo; lamina ovalis, oblongo-elliptica vel subrotundata, 4–6.5 cm. longa, 3–4.5 cm. lata, apice late rotundata vel rare late obtusa et brevissime obtuse apiculata, basi rotundata usque ad acuta et vulgo abrupte contracta et breviter decurrens, supra in sicco fusca, lucida, glabra, tantum ad venas puberula, costa venisque profunde impressis, venulis subimpressis, subtus pallidior, ubique dense laxaeque fulvo-tomentosa, venis tomento fere occultis, nervis lateralibus utroque latere c. 7 angulo acuto adscendentibus arcuatis prope marginem conjunctis; cymae axillares solitariae pauciflorae non vel brevissime ramosae usque ad 1 cm. longe pedunculatae, pedunculo rigido crasso dense fulvo-tomentoso, floribus arcte sessilibus; drupa ovalis vel obovoidea lucida glabra 8–9 mm. longa et 6–7 mm. lata, basi et apice rotundata vel basi acutiuscula 2–3-locularis. Brazil: Without locality, *Burchell 6649* (Herb. Kew., type).

A member of Mueller's section *Matthiola*; distinguished from related Brazilian species by the very abundant, loose tomentum of the lower leaf surface, and by the rounded or very obtuse leaf apex.

Guettarda hypoglauca, sp. nov.—Ramuli crassi subteretes fusco-ferruginei subglaucci rimosi, novellis densissime patentipilosis, internodiis valde abbreviatis plerumque 3–4 mm. longis; stipulae deciduae rotundato-ovatae 6–7 mm. longae acutae extus dense fulvo-pilosae, intus sericeae; folia petiolata crasse membranacea opposita magna, petiolo gracili vel crassiusculo 1.5–3 cm. longo dense pilis gracilibus patentibus ochraceis vel fulvis piloso; lamina ovata vel deltoideo-ovata 9.5–14 cm. longa 6–8.5 cm. lata acuta vel subabrupte acuminata, basi obtusa vel rotundata, interdum abrupte contracta et breviter decurrens, supra in sicco fusca, ubique dense hispidulo-pilosa, mollis, costa venisque prominulis, subtus discolor, incana, ubique densissime pilis subadpressis vel subpatentibus griseis plus minusve intertextis pilosa, costa gracili elevata, nervis lateralibus utroque latere c. 10 angulo semirecto adscendentibus gracilibus prominentibus leviter arcuatis vel fere rectis prope marginem conjunctis, nervulis crebris transversis parallelis tenuibus pilis fere occultis; cymae axillares solitariae dense multiflorae 1.5–2 cm. latae c. 1 cm. longe pedunculatae petiolis vix longiores, breviter dichotomae, pedunculo crasso densissime fulvo-piloso, floribus arcte sessilibus, bracteis filiformibus densissime fulvo-pilosis calycem aequantibus vel longioribus; hypanthium 1.5 mm. longum densissime

longipilosum, calyce tubuloso-campanulato truncato 2.5–3 mm. longo extus dense longeque piloso; corolla extus dense adpresso-pilosa, tubo gracili c. 2 cm. longo 2 mm. lato supra vix dilatato, lobis 5 adscendentibus 3–4 mm. longis oblongis apice rotundatis intus puberulis vel breviter pilosis; antherae ut stylus inclusae.—Brazil: "Environs de Rio de Janeiro et d'Ouro Preto," 1883–84, *A. Glaziov 14950* (Herb. Kew., type).

The plant belongs to the section *Cadamba*, and is related to *G. viburnoides* C. & S., likewise a Brazilian species. From all the forms of that species, however, *G. hypoglauca* differs in its exceedingly copious pubescence consisting of spreading or only laxly appressed, long hairs.

Anisomeris Englesingii (Standl.), comb. nov. *Chomelia Englesingii* Standl. Trop. Woods 16: 45. 1928.

The species was described from the Atlantic coast of Nicaragua. It may now be reported from Panama: Caño Quebrado, Canal Zone, June, 1914, *H. Pittier 6659* (Herb. Berol.). The Panama specimens differ from the type only in having the leaves more abundantly pilose on the under surface. The species is not listed in the writer's *Flora of the Panama Canal Zone*.

Anisomeris Klugii, sp. nov.—Frutex 2-metralis, ramulis gracilibus subteretibus ochraceis, novellis dense strigoso-sericeis, internodiis plerumque brevibus; stipulae persistentes erectae brunneae glabratae anguste triangulares vel lineari-subulatae 2.5–3.5 mm. longae; folia breviter petiolata opposita, petiolo gracili 3–6 mm. longo strigoso vel glabrato; lamina firme membranacea oblongo-ovata, oblongo-elliptica vel lanceolato-elliptica, 4–7 cm. longa, 1.5–2.5 cm. lata, abrupte caudato-acuminata, acumine longo angusto attenuato, basi acuta vel basin versus angustata, supra viridis, glabra, costa venisque subimpressis, subtus vix pallidior, ad costam venasque strigosa, aliter glabra, costa gracili elevata, nervis lateralibus utroque latere c. 5 angulo acuto adscendentibus gracilibus prominentibus arcuatis prope marginem conjunctis, inter nervulos prominulos reticulatos minute lineolata; flores in axillis solitarii vel pauci et fasciculati, sessiles vel brevissime pedicellati; hypanthium vix 1 mm. longum strigosum, calyce tubuloso 2 mm. longo strigoso-sericeo, laciniis linearibus suberectis 2–2.5 mm. longis; corolla alba extus dense sericea, tubo fere filiformi 18 mm. longo supra non dilatato, laciniis 4 lineari-attenuatis 4 mm. longis intus glabris.—Peru: Mishuyacu, near Iquitos, Dept. Loreto, alt. 100 m., in forest, December, 1929, *G. Klug 661* (Herb. Field Mus. No. 612,620, type).

Probably conspecific is *Killip & Smith 28738* from Santa Rosa on the lower Río Huallaga, Dept. Loreto. The specimen is sterile and the branches armed with spines in the leaf axils. In the type specimen the branches are unarmed.

Anisomeris occidentalis (Muell. Arg.), comb. nov. *Chomelia occidentalis* Muell. Arg. Flora 58: 452. 1875.

The type was collected in western Brazil by Tamberlik. The following additional collections may be reported: Brazil: Without locality, *Claussen 615* (Herb. Berol.). Goyaz, *Glaziov 21493* (Herb. Berol., Herb. Stockholm).

Anisomeris ribesioides (Benth.) Rusby, var. *villosula* (Muell. Arg.), comb. nov. *Malanea ribesioides* var. *villosula* Muell. Arg. Flora 58: 453. 1875. *Chomelia ribesioides* var. *villosula* Muell. Arg. in Mart. Fl. Bras. 6^a: 41. 1881.

Anisomeris brasiliانا (A. Rich.), comb. nov. *Chomelia brasiliانا* A. Rich. Mém. Mus. Hist. Nat. Paris 5: 183. 1834.

Anisomeris pedunculosa (Benth.), comb. nov. *Chomelia pedunculosa* Benth. Linnaea 23: 445. 1850.

Anisomeris tristis (Muell. Arg.), comb. nov. *Chomelia tristis* Muell. Arg. Flora 58: 452. 1875.

Anisomeris pubescens (C. & S.), comb. nov. *Chomelia pubescens* C. & S. Linnaea 4: 187. 1829.

Anisomeris oligantha (Muell. Arg.), comb. nov. *Chomelia oligantha* Muell. Arg. Flora 58: 452. 1875.

Anisomeris vulpina (Muell. Arg.), comb. nov. *Chomelia vulpina* Muell. Arg. Flora 58: 452. 1875.

Anisomeris estrellana (Muell. Arg.), comb. nov. *Chomelia estrellana* Muell. Arg. Flora 58: 452. 1875.

Anisomeris parviflora (Muell. Arg.), comb. nov. *Chomelia parviflora* Muell. Arg. Flora 58: 453. 1875.

Anisomeris malaneoides (Muell. Arg.), comb. nov. *Chomelia malaneoides* Muell. Arg. Flora 58: 452. 1875.

Anisomeris transiens (Muell. Arg.), comb. nov. *Chomelia transiens* Muell. Arg. in Mart. Fl. Bras. 6^a: 457. 1888.

Anisomeris sessilis (Muell. Arg.), comb. nov. *Chomelia sessilis* Muell. Arg. Flora 58: 451. 1875.

Brazil: Cuyabá, *Riedel 1117* (Herb. Leningrad). S. L. de Caceres, Matto Grosso, in 1911, *Hoehne 4606*; flowers white.—Peru: Seringal Auristella, Río Acre, April, 1911, *Ule 9860*; a shrub or tree 6-18 m. high; flowers white.

The Peruvian specimen shows slight differences from the others, but it probably is only a form of *A. sessilis*.

Anisomeris juruensis, sp. nov.—Frutex vel arbuscula 5-metralis, ramulis teretibus gracilibus cinereis in axillis spinis rigidis divari-

catis validis paucis c. 1 cm. longis armatis, novellis brunneis minute adpresso-pilosulis, internodiis brevibus; stipulae subpersistentes erectae tenues brunneae e basi lata abrupte subulato-attenuatae extus minute adpresso-pilosulae; folia mediocria breviter petiolata membranacea opposita, petiolo gracili 3–6 mm. longo puberulo; lamina elliptica vel oblongo-elliptica, interdum ovato-elliptica, 4–8 cm. longa, 2–3.5 cm. lata, abrupte longiacuminata, acumine angusto longe attenuato c. 1 cm. longo, basi acuta usque ad rotundata, supra in sicco fusca, tantum ad venas sparse puberula vel fere glabra, venis non elevatis, subtus brunnescens, ad venas minute adpresso-pilosula, in axillis barbata, costa gracili elevata, nervis lateralibus utroque latere c. 7 angulo recto vel paullo latiore adscendentibus valde arcuatis gracilibus prominentibus prope marginem conjunctis, nervulis subimpressis laxe reticulatis, pagina inter nervulos creberrime pulchre lineolata; flores axillares solitarii, pedicellis gracilibus 1–2 mm. longis, bracteolis lanceolatis hypanthium aequantibus vel longioribus; hypanthium oblongum 1–1.5 mm. longum sparse minute strigillosum; calyx 1.5 mm. longus ad medium vel paullo profundius 4-fidus extus dense strigillosum, laciniis lineariter attenuatis erectis; corolla alba extus dense ochraceo-sericea, tubo gracillimo 15–17 mm. longo fere 1 mm. crasso supra vix dilatato, lobis 4 lanceolato-linearibus 5–6 mm. longis patentibus attenuatis intus glabris; antherae oblongae semiexsertae. —Brazil: Bom Fin, Rio Juruá, Amazon region, November, 1900, *E. Ule 5131* (Herb. Kew., type).

Because of the form of the calyx, this plant is related to *Anisomeris brasiliiana* (A. Rich.) Standl., also Brazilian. That species differs in its merely acute or subacute leaves with less numerous pairs of veins and in its more abundant pubescence consisting of long hairs.

***Anisomeris parvifolia*, sp. nov.**—Frutex vel arbor dense ramosa in axillis spinis gracilibus 1.5–2 cm. longis armata, ramulis gracilibus teretibus fusco-olivaceis, novellis dense pilis rigidulis subpatentibus brevibus pilosis, internodiis plerumque abbreviatis; stipulae persistentes suberectae dense strigosae late ovato-triungulares 1.5–2 mm. longae subulato-acuminatae; folia longiuscule petiolata opposita, petiolo gracili 8–17 mm. longo pilis ochraceis laxè adscendentibus dense piloso; lamina membranacea ovata, oblonga vel ovato-elliptica, 2–4 cm. longa, 1–1.7 cm. lata, acuta vel brevissime acuminata, basi obtusa vel acuta, interdum basin versus sensim angustata, supra sparse hispidula, costa venisque prominulis, inter nervulos lineolata, subtus paullo pallidior, ubique pilis brevibus subpatentibus hispidulopilosa, costa gracili elevata, nervis lateralibus utroque latere c. 5 angulo acuto adscendentibus gracilibus prominentibus arcuatis juxta marginem conjunctis; flores axillares solitarii, pedicellis filiformibus 9–14 mm. longis dense pilosis, bracteolis filiformibus hypanthio brevioribus; hypanthium obovoideo-oblongum 1.5 mm. longum basi acutum dense ochraceo-pilosulum; calycis tubus cylindraceus 1.2 mm. longus adpresso-pilosus, laciniis c. 1.5 mm. longis lineariter attenuatis

subrecurvis viridibus; corolla extus pilosulo-sericea, tubo gracili 6 mm. longo superne non dilatato, lobis 4 lanceolato-oblongis 4 mm. longis patentibus abrupte acuminatis intus glabris.—Brazil (State of Paraná): Serra do Mar, Itupava, in silva primaeva, alt. 460 m., September 17, 1908, *P. Dusén* 6728 (Stockholm herb., type). Without definite locality, November, 1914, *Dusén* 15824 (S). Kilometra 60, in silva primaeva, *G. Jänssan* 685a (S). Volta Grande, in silva primaeva, September, 1915, *Dusén* 17194 (S).

The specimens were referred by the collector to *Chomelia Vauthieri* Muell. Arg. I have seen no specimens of that species, described from Serra dos Orgãos, but according to description it differs in having much larger leaves with sparse appressed pubescence, and a much longer corolla.

Anisomeris monantha Schum. in herb., sp. nov.—Frutex vel arbuscula, ramis gracilibus subteretibus fuscis vel fusco-ferrugineis inermibus vel in axillis sparse spinis brevibus gracilibus armatis, ramulis dense pilis brevibus ochraceis subadpressis pilosulis, internodiis brevibus; stipulae subpersistentes ovato-triungulares c. 1 mm. longae acutae vel acuminatae adpresso-pilosulae erectae; folia parva membranacea petiolata opposita, petiolo gracillimo 3–5 mm. longo dense adpresso-pilosulo; lamina ovata vel lanceolato-ovata 1.5–4 cm. longa 7–15 mm. lata acuta vel sensim longiuscule acuminata basi acuta, supra in sicco fusco-viridis, glabra vel ad venas pilosula, venis vix prominulis, subtus fere concolor, ad venas dense adpresso-pilosula, costa gracili elevata, nervis lateralibus utroque latere 4–5 arcuatis gracillimis prominentibus angulo acuto adscendentibus, pagina inter venas pulchre et artissime parallele striolata; flores numerosi axillares solitarii, pedicellis filiformibus 3–6 mm. longis adpresso-pilosulis, bracteolis filiformibus hypanthio brevioribus; hypanthium oblongum 1 mm. longum basi obtusiusculum dense ochraceo-strigosum; calycis tubus fere 1 mm. longus strigosus, lobis 4–5 filiformi-linearibus aequilongis patentibus vel recurvis; corolla extus subdense strigosa, tubo gracillimo 7 mm. longo supra vix dilatato, lobis 4 lanceolato-oblongis 2.5–3 mm. longis obtusis intus glabris; antherae inclusae; stylus filiformis inclusus glaber.—Brazil: Rio de Janeiro, 1876–77, *Glaziou* 8749 (Herb. Berol., type; fragm. and photo. in Herb. Field Mus.; duplicates in herb. Stockholm, herb. Kew., and herb. Leningrad).

The species is well marked by its small leaves, and solitary flowers with exceptionally short corollas.

Anisomeris modesta, sp. nov.—“Frutex spinosus,” ramulis inermibus teretibus fusco-ferrugineis, novellis dense fulvo-hirtellis, internodiis abbreviatis; stipulae subpersistentes ovato-triungulares c. 1 mm. longae acutae vel acuminatae hirtellae; folia membranacea parva petiolata opposita, petiolo 1.5–3 mm. longo dense hirtello; lamina oblongo-ovata, ovata vel late ovata 7–19 mm. longa 5–9 mm.

lata acuta vel obtusa et abrupte apiculata, basi obtusa vel rotundata, supra in sicco fusca, dense pilosa vel serius glabrata, inter venas striolato-venulosa, subtus fere concolor, densissime hirtello-pilosa, costa prominente, nervis lateralibus utroque latere 3-4 inconspicuis; flores axillares solitarii, pedicello filiformi 3-7 mm. longo dense patenti-piloso, bracteolis filiformibus hypanthio brevioribus; hypanthium 0.8 mm. longum late oblongum dense pilis pallidis patentibus pilosum; calycis tubus c. 0.5 mm. longus breviter hirtellus, lobis filiformi-linearibus patentibus vel recurvis 1-1.5 mm. longis; corolla alba extus pilis albidis patentibus vel subadpressis pilosa, tubo 5-6 mm. longo supra paullo dilatato 0.8 mm. crasso, lobis oblongo-ovatis 3.5-4.5 mm. longis versus apicem obtusum attenuatis intus glabris patentibus; antherae inclusae; stylus glaber.—Brazil: In silva secundaria ad São José dos Campos, Lagôa do Veado, State of São Paulo, September 23, 1909, *A. Löfgren 4127* (Herb. Berol., type).

The plant is similar in most characters to *A. monantha* Schum., but differs in its spreading pubescence, broader leaves, and relatively larger corolla lobes.

Anisomeris bella, sp. nov.—Frutex vel arbuscula, ramis vetustioribus spinis validis 1-2 cm. longis divaricatis armatis, ramulis subteretibus fuscis vel fusco-ferrugineis gracilibus, novellis pilis pallidis patentibus densiuscule pilosis, internodiis plerumque brevibus; stipulae ferrugineae subpersistentes 3-4 mm. longae triangulari-lanceolatae longe acuminatae erectae pilis adpressis vel subpatentibus pilosulae; folia petiolata opposita membranacea, petiolo gracili 3-7 mm. longo dense piloso vel pilosulo; lamina late ovata, lanceolato-ovata vel ovato-elliptica 1.5-3.5 cm. longa 1-2 cm. lata acuta vel longe acuminata, basi late obtusa usque ad subcordata, supra fusco-viridis, primo dense sericeo-pilosa, serius glabrata, venis vix prominulis, subtus incana, dense pilosa vel subtomentosa, interdum plus minusve glabrata, costa gracili prominente, nervis lateralibus utroque latere 5-7 angulo lato vel angusto adscendentibus gracillimis prominulis arcuatis; cymae axillares dense multiflorae capituliformes vel basi brevissime ramosae, pedunculo gracili recto vel leviter curvo 12-18 mm. longo patenti-piloso, floribus sessilibus congestis, bracteis paucis lineari-subulatis calyce brevioribus; hypanthium 1.2 mm. longum late oblongum dense albedo-tomentosum; calyx c. 1.5 mm. longus ad medium 4-5-lobus lobis erectis lineari-oblongis vel lanceolato-subulatis acutiusculis dense pilosulis; corolla extus sparse adpresso-pilosa, tubo gracillimo 10-12 mm. longo supra vix dilatato ore 1 mm. lato, lobis 4 patentibus oblongo-ellipticis vel elliptico-ovatis 1.5 mm. longis obtusis intus glabris; antherae inclusae; stylus glaber.—Brazil: Espirito Santo do Pinhal, *F. C. Hoehne 11875* (Herb. Berol., type). Santa Rita do Passa Quatro, São Paulo, October 1, 1899, *Ernst Hemmendorff 233* (Herb. Stockholm).

Anisomeris randioides, sp. nov.—Frutex mediocris, ramulis crassis rigidis patentibus inermibus subteretibus ferrugineis dense

pilis brevibus pallidis patentibus pilosis, internodiis plerumque 1-2 cm. longis; stipulae subpersistentes late triangulares 2-3 mm. longae acuminatae erectae dense adpresso-pilosae; folia parva subcoriacea brevissime petiolata opposita, petiolo crassiusculo 1-2 mm. longo dense breviter piloso; lamina late elliptica, ovalis vel rotundato-ovata 1-2 cm. longa 8-14 mm. lata acuta vel obtusa et apiculata, basi anguste vel late rotundata, supra fusco-viridis, glabra, venis obscure impressis, subtus pallidior, dense pilis pallidis vel lutescentibus longiusculis patentibus pilosa, costa crassiuscula elevata, nervis lateralibus utroque latere 4-5 inconspicuis vix prominulis angulo acuto adscendentibus arcuatis; cymae pedunculatae 1-3-florae, pedunculo gracili 5-10 mm. longo densiuscule pilis longis patentibus piloso, floribus sessilibus; hypanthium 1.2 mm. longum sparse pilis longis patentibus pilosum; calyx tubulosus 1.5 mm. longus ad medium 4-5-lobus, lobis erectis triangulari-oblongis apice obtusis vel anguste rotundatis sparse pilosis; corolla alba extus densiuscule albo-sericea, tubo gracili cylindraceo 10 mm. longo supra 1.4 mm. lato, lobis 4 ovato-oblongis 2 mm. longis apice rotundatis subpatentibus intus glabris; antherae anguste oblongae inclusae vel semiexsertae; stylus glaber.—Brazil: Caminho Joazeiro, State of Ceará, April 23, 1910, *Alb. Löfgren 663* (Herb. Stockholm, type).

In general appearance as well as in the abundant pubescence, this plant resembles *Anisomeris sessilis* (Muell. Arg.) Standl., but in that the inflorescences are sessile and many-flowered.

Chomelia tenuiflora Benth. in Hook. Journ. Bot. 3: 235. 1841.

This species was not recorded from Colombia in the writer's recent enumeration of the Rubiaceae of that country. The following collections are in the Leningrad herbarium: Colombia: Servitá, *Karsten*. Villavicencio, *Karsten*.

Malanea forsteronioides Muell. Arg., var. *pilosa*, var. nov.—A forma typica ramis pilosis foliis supra sparse pilis longiusculis subpatentibus subtus in statu juvenili pilis pallidis longis non arcte adpressis pilosis, inflorescentiis magis pilosis recedit.—Brazil: Paraná, Paraty, ad rivulam scandens, December 30, 1911, *P. Dusén 13769* (Herb. Stockholm, type).

In the typical form of the species, represented by a large number of specimens collected in Paraná by Dusén, the leaves are glabrate and bear only closely appressed hairs.

Chiococca erubescens Wernham, Journ. Bot. 51: 322. 1913.

Wernham described this clearly distinct species from Venezuela, and it is represented by several collections from that country. Its range extends as far as French Guiana: Without locality, *Poiteau* (Herb. Leningrad).

Chione mexicana Standl. Journ. Washington Acad. Sci. 17: 340. 1927.

In a collection of Rubiaceae received for determination some time ago from the Jardin Botanique Principal of Leningrad there was found an old specimen of this species that deserves to be placed on record: Mexico: Papantla, Veracruz, in 1841, *Karwinsky 1260*. Described as a tree 6 m. high.

Ixora nicaraguensis Wernham, Journ. Bot. 50: 243. 1912. *I. rauwolfioides* Standl. Trop. Woods 11: 27. 1927.

Examination of a duplicate type of *Ixora nicaraguensis* shows that *I. rauwolfioides* differs in no essential character, or in none at all for that matter, the characters upon which the latter was separated proving to be unstable. The following specimens of the species have been examined:

Nicaragua: Chontales, *Seemann 117* (Herb. Kew., type collection).—Panama: Changuinola Valley, a small tree, March, 1924, *V. C. Dunlap 553, 566*. Progreso, Chiriquí, a small stubby tree 4.5 m. high, the trunk 7.5–10 cm. in diameter, in 1927, *Cooper & Slater 205*; a small tree 6 m. high, the trunk 7.5 cm. in diameter, common, the wood light-colored, hard and cross-grained, *Cooper & Slater 245*. Daytonia Farm, a tree 7.5–9 m. high, the trunk 7.5 cm. in diameter, *Cooper 419*. Vernacular name, "oguito."

Ixora floribunda (A. Rich.) Griseb. Cat. Pl. Cub. 134. 1866. *Siderodendron floribundum* A. Rich. in Sagra, Hist. Cub. 11: 24. 1850.

Colombia: Honda, in 1844, *Goudot* (Herb. Paris). San Miguel, Río Magdalena, Prov. Mariquita, 400 m., *Triana 1729* (Herb. Paris). Without locality, *Triana 21* (Herb. Paris).

Coussarea grandifolia Rusby, Descr. N. Sp. S. Amer. Pl. 144. 1920.

Colombia: Prov. Ocaña, 1,800 m., June, 1846–52, *L. Schlim 713* (Herb. Paris). Growing in forest; flowers violaceous.

Coussarea megalocarpa, sp. nov.—Arbuscula, ramulis crassis sparse puberulis; stipulae deciduae, non visae; folia breviter petiolata opposita, petiolo gracili 1–1.5 cm. longo puberulo; lamina firme membranacea elliptica vel oblongo-elliptica 12–18 cm. longa 4.5–8 cm. lata longe acuminata, acumine angusto longe attenuato, basi acuta, supra viridis, ad venas minute puberula, sublucida, costa venisque vix elevatis, nervulis prominulis, subtus paullo pallidior, ubique dense molliterque pilis brevissimis patentibus vel subadpressis pilosula, costa gracili elevata, nervis lateralibus utroque latere c. 12 obliquis angulo latiusculo adscendentibus subarcuatis gracilibus pallidis prominentibus prope marginem conjunctis, nervulis prominulis laxè reticulatis; inflorescentia terminalis capitata dense multiflora c. 1 cm. longe pedunculata, pedunculo dense griseo-puberulo

crasso, bracteis longis linearibus; hypanthium obconicum dense adpresso-pilosum; calyx campanulatus dense adpresso-pilosus, tubo truncato in lacinias lineares vel subulatas usque ad 12 mm. longas desinente; fructus magnus ovali-globosus c. 3 cm. longus et 2 cm. latus sparse puberulus vel pilosulus vel glabratus in sicco pallidus grosse costatus, basi et apice rotundatus, monospermus.—Peru: Río Mazán, near Iquitos, Dept. Loreto, April 6, 1930, *Llewellyn Williams* 8171 (Herb. Field Mus. No. 614,508, type).

The species is noteworthy for the copious pubescence of the under surface of the leaves, and for the very large fruits.

Coussarea sessilifolia, sp. nov. Frutex omnino glaber, ramulis gracilibus subteretibus in sicco pallide viridibus, internodiis elongatis; stipulae persistentes minutae vix 1 mm. longae subtruncatae et 0.5 mm. longe mucronatae; folia sessilia vel usque ad 2 mm. longe petiolata membranacea elliptica, elliptico-oblonga vel obovato-elliptica, 6.5–11 cm. longa, 3–6 cm. lata, abrupte breviter acuminata, acumine anguste triangulari-attenuato subobtusos, basin versus paullo angustata, basi ipsa anguste rotundata vel breviter cordata, supra viridis, costa venisque conspicuis sed vix elevatis, raphidibus minutissimis pallidis conspersa, subtus pallidior, costa gracili pallida elevata, nervis lateralibus utroque latere c. 9 angulo lato adscendentibus gracilibus prominulis inaequalibus plus minusve arcuatis prope marginem conjunctis, nervulis prominulis laxe reticulatis; inflorescentia terminalis cymoso-paniculata graciliter 2–3 cm. longe pedunculata erecta laxissime pauciflora, ramulis gracillimis patentibus, inferioribus trifloris, superioribus 1-floris, bracteis minutis vel obsoletis, pedicellis gracilibus 4–15 mm. longis interdum sparse minutissime puberulis; hypanthium anguste clavatum c. 2 mm. longum, calyce campanulato 2 mm. longo breviter dentato, dentibus late triangularibus obtusis vel acutiusculis; corolla extus glabra in alabastro linearis obtusa 18 mm. longa, lobis linearibus tubo fere duplo longioribus.—Peru: Puerto Arturo, Yurimaguas, lower Río Huallaga, Dept. Loreto, alt. 155–210 m., November 15, 1929, in forest, *Llewellyn Williams* 5084 (Herb. Field Mus. No. 614,474, type); November 19, 1929, *Williams* 5201.

In the genus *Coussarea* this plant is unusual because of the very slender branches of the open few-flowered inflorescence. Among the Peruvian species it is unique in its sessile leaves.

Coussarea ovalis, sp. nov.—Ramuli crassiusculi subteretes glabri, internodiis elongatis; stipulae persistentes erectae late rotundatae et subulato-acuminatae 8 mm. longae glabrae; folia breviter petiolata opposita, petiolo crassiusculo 12–15 mm. longo glabro; lamina subcoriacea ovalis 14–17 cm. longa, 7–9.5 cm. lata, apice rotundata et caudata, acumine oblongo-lineari c. 1 cm. longo obtuso, basi obtusa vel acuta, glabra, in sicco flavo-viridis, costa venisque supra prominentibus, venulis inconspicuis, costa subtus elevata gracili, nervis lateralibus utroque latere c. 10 angulo lato divergentibus gracilibus prominentibus fere rectis remote a margine conjunctis, venulis

prominulis laxè reticulatis; inflorescentia terminalis late thyrsoido-paniculata sessilis vel 4 cm. longè pedunculata, 5-9 cm. longa et 4-7 cm. lata, sublaxè multiflora, basi verticillato-ramosa, ramis crassiusculis divaricatis vel late adscendentibus glabris, bracteis obsoletis, floribus sessilibus in cymulas parvas densas paucifloras dispositis; hypanthium obconicum glabrum 1 mm. longum, calyce late campanulato 1.5 mm. longo truncato glabro; corolla extus minute pulverulaceo-puberula in alabastro obtusa, tubo gracili cylindraceo 5-6 mm. longo, lobis oblongo-lanceolatis 4.5 mm. longis.—Peru: Paraíso, on the Alto Río Itaya, Dept. Loreto, alt. 145 m., October 2, 1929, *Llewelyn Williams 3355* (Herb. Field Mus. No. 614,164, type).

The leaves of this species resemble those of *C. urophylla* Standl., of Bolivia, but in that the calyx is shorter than the hypanthium, and the form of the corolla very different.

Coussarea tricephala, sp. nov.—Frutex, ramulis crassiusculis subteretibus in sicco pallide brunneis glabris, internodiis abbreviatis; stipulae (perfectae non visae) latissime ovatae obtusae minutissime puberulae; folia breviter petiolata opposita, petiolo gracili 8-13 mm. longo minute sparseque puberulo vel glabrato; lamina membranacea elliptico-oblonga 10.5-16 cm. longa 3.5-6 cm. lata longè subabruptè acuminata, acumine angusto attenuato, basin versus longiuscule angustata, basi ipsa acuta vel acuminata, supra viridis, ad costam venasque minute pilosula, aliter glabra, sparse raphidibus minutis conspersa, costa venisque prominulis, nervulis prominulis laxè reticulatis, subtus paullo pallidior, glabra, minute pallido-puncticulata, costa gracili elevata, nervis lateralibus utroque latere c. 13 obliquis angulo acuto adscendentibus prominentibus gracillimis prope marginem conjunctis, nervulis prominulis, inflorescentia terminalis crasse c. 7 mm. longè pedunculata e capitulis 3 crassissime 3-10 mm. longè pedunculatis dense multifloris corollis neglectis fere 1 cm. latis composita, pedunculis pallidis glabris, floribus arcte sessilibus; hypanthium columnare 2 mm. longum costato-striatum sparse minute puberulum vel glabratum, calyce late campanulato c. 2 mm. longo et 3 mm. lato pallido truncato obsolete et remotissime denticulato; corolla extus glabra vel sparse minutissime puberula, tubo gracillimo c. 2.5 cm. longo supra vix dilatato medio 1.5 mm. lato, lobis lineari-oblongis 1 cm. longis obtusis apice sparse brunneo-hispidulis.—Peru: Tarapoto, alt. 360-900 m., December 20, 1929, *Llewelyn Williams 6533* (Herb. Field Mus. No. 614,436, type).

Among the Peruvian species of *Coussarea* this is easily recognized by the form of the inflorescence, which consists of three small dense heads borne on short stout peduncles.

Coussarea benensis Britton ex Standl. Field Mus. Bot. 7: 296. 1931.

The species was described from Bolivia, but recently specimens have been seen from Brazil also: Brazil: Resaca, Rio Juruá, November 1, 1874, *J. W. H. Traill* 448 (Herb. Kew.). A shrub with white flowers.

Coussarea hydrangeifolia (Benth.) Muell. Arg. *Flora* 58: 467. 1875. *Faramea hydrangeifolia* Benth. *Linnaea* 23: 451. 1850.

Although this species is a rather common and widely distributed one, it is perhaps worth while to report the following collections, which probably illustrate extensions of range: Paraguay: Río Apo, December, 1896, a shrub or small tree, *J. D. Anisits* 2449 (Herb. Stockholm); a shrub 3-4 m. high, *Anisits* 2454 (S).—Brazil: Cuyabá, Matto Grosso, "in cerrado minus denso," November, 1893, *G. A. Malme* 1188 (Herb. Stockholm); a tree 2-3 m. high with smooth bark; flowers white, fragrant.

Faramea axillaris Standl. *Field Mus. Bot.* 8: 178. 1930.

Several additional collections, in better condition than those previously cited, may now be reported for this well-marked species:

Peru: Puerto Arturo, lower Río Huallaga, Dept. Loreto, a small shrub in forest, November, 1929, *Williams* 5103, 5077. Santa Rosa, lower Río Huallaga, Dept. Loreto, 155-210 m., a small shrub in forest, November, 1929, *Williams* 4954. Paraíso, Alto Río Itaya, Dept. Loreto, 145 m., a small shrub, October, 1929, *Williams* 3368.

Declieuxia fruticosa (Willd.) Kuntze, *Rev. Gen. Pl.* 1: 279. 1891. *Houstonia fruticosa* Willd. ex R. & S. *Syst. Veg.* 3: 527. 1818.

Colombia: Anapoima, Bogotá, 700 m., *Triana* 1702 (Herb. Paris). Ocaña, in savannas, *Schlim* 161 (Herb. Paris).

Declieuxia fruticosa (Willd.) Kuntze, var. **guyanensis** (Muell. Arg.), comb. nov. *D. chiococcoides* HBK., var. *guyanensis* Muell. Arg. *Flora* 59: 435. 1876.

Colombia: Villavicencio, 300 m., *Triana* 1701 (Herb. Paris).

Declieuxia Dusenii, sp. nov.—Herba perennis erecta vel decumbens 30-50 cm. alta, caulibus inferne simplicibus vel paullo ramosis teretibus viridibus glabris, internodiis saepe foliis longioribus; stipulae lineares et foliaceae vel lineari-subulatae 5-10 mm. longae glabrae, lobo filiformi breviori utrinque saepe adjecto, dorso linea angusta decurrentes, erectae; folia longe petiolata opposita, petiolo gracili 5-9 mm. longo glabro; lamina membranacea ovata, rhombeo-ovata vel anguste elliptica, 1.5-3.5 cm. longa, 0.8-1.7 cm. lata, acuta vel obtusa, rarius sensim acuminata, basin versus angustata vel saepius prope basin abrupte contracta et longiuscule decurrens, supra sparse scaberula vel glabrata, costa venisque manifestis sed vix elevatis, subtus fere concolor, glabra vel tantum ad venas scaberula,

costa gracili elevata, nervis lateralibus utroque latere 6-7 gracilibus prominulis angulo acuto adscendentibus arcuatis prope marginem conjunctis; inflorescentia magna terminalis cymoso-paniculata et angusta vel interdum anguste corymbiformis, inferne foliis magnis bracteata, cymis dense multifloris longe pedunculatis c. 2 cm. latis, bracteis parvis linearibus vel subulatis calyce vix longioribus inconspicuis; hypanthium late turbinatum 0.7-1 mm. longum glabrum; calycis laciniae hypanthio aequilongae lineares vel oblongo-lineares distantes erectae; corolla caerulea extus glabra 6-7 mm. longa, tubo gracili superne sensim dilatato, lobis oblongis obtusis vel acutiusculis tubo duplo vel triplo brevioribus; antherae breviter exsertae oblongae 1 mm. longae; stylus gracillimus exsertus; fructus didymus 2 mm. latus glaber, hemicarpiis c. 1.2 mm. longis apice rotundatis subcompressis superne nonnihil divergentibus.— Brazil: Serrinha, Paraná, in campo, December 7, 1908, *P. Dusen* 7301 (Stockholm herb., type). Casa Ypiranga, Paraná, locis graminosis, January, 1914, *Dusen* 14004 (S). Villa Velha, Paraná, in rupibus, October, 1914, *G. Jänssan* 1247a (S). Serra do Mar, Ypiranga, Paraná, in graminosis, February, 1904, *Dusen* 3639 (S). Prov. São Paulo, 1816-21, *Auguste de Saint-Hilaire* 1549 (Herb. Paris). Without locality, 1861-62, *J. Weir* 442 (Herb. Kew.).

There are only a few species of *Declieuxia* that have petiolate leaves, and this one seems to be related to *D. clinopodioides* Muell. Arg., described from the state of Bahia. I have seen no material of *D. clinopodioides*, but, according to Mueller's description, its inflorescence is comose because of the numerous long bracts, which equal or exceed the flowers. In *D. Dusenii* the bracts are very small and inconspicuous.

Cephaelis chiapensis Standl. Field Mus. Bot. 4: 295. 1929. *Evea chiapensis* Standl. Contr. U. S. Nat. Herb. 23: 1392. 1926.

The type was collected at Finca Mexiquito, Chiapas, Mexico, *Purpus* 6928. The species extends also to northern Central America: Guatemala: Retalhuleu, April, 1877, *Bernoulli & Cario* 1710 (Herb. Berol.).

Cephaelis surinamensis Standl. Field Mus. Bot. 4: 335. 1929.

One additional collection of the species has been examined recently: Surinam: Forest of Zandery, May, 1916, *J. A. Samuels* 524 (Herb. Berol.).

Cephaelis tontaneoides (Britt. & Standl.) Williams & Cheesman, Fl. Trin. Tobago 2: 41. 1928. *Evea tontaneoides* Britt. & Standl. Journ. Washington Acad. Sci. 13: 106. 1923. *Cephaelis tontaneoides* Standl. Field Mus. Bot. 8: 183. 1930.

The names cited above relate to a comedy of errors such as, it is to be hoped, only infrequently relieves the otherwise dry pages devoted to descriptions of new species of plants.

Evea tontaneoides Britt. & Standl. was based upon *Broadway* 9774 from Caparo, Trinidad, the type specimen being in the herbarium of the Trinidad Botanic Garden. The species was transferred quite properly to *Cephaelis* by Williams and Cheesman in their enumeration of the Rubiaceae of Trinidad and Tobago. In publishing the second *Cephaelis tontaneoides* in 1930, the writer quite overlooked the previous publication of *Evea tontaneoides*, and the name *Cephaelis tontaneoides* had not been listed in the Gray Herbarium card catalogue of new species. The two species, then, were published quite independently, the *C. tontaneoides* of 1930 being based on *De La Cruz* 4239, from British Guiana.

The ending of the comedy is a happy one, however, for it turns out that all the names relate to the same species, which is known at present from Trinidad, British Guiana, French Guiana, and the region of Pará in Brazil. The confusion is, fortunately, less than would have been the case had two distinct plants been described under the same specific name.

Cephaelis timbiquensis Standl. Field Mus. Bot. 7: 81. 1930.

An additional collection may be reported for this species, which has been known heretofore only from the type specimen: Colombia: Chocó and Barbacoas, 1851-57, *Triana* 1672 (Herb. Paris). Vernacular name, "amargo."

Cephaelis axillaris Sw. Prodr. Veg. Ind. Occ. 45. 1788. *C. pseudaxillaris* Wernham, Journ. Bot. 55: 284. 1917.

In the enumeration of the Rubiaceae of Colombia it was stated that Wernham's name was perhaps a synonym of *C. axillaris*. I have now examined a sheet of the type collection of *C. pseudaxillaris* in the Paris herbarium, *Triana* 1689 from Chocó and Barbacoas, Colombia. I see no good reason for considering the specimen to be different from *C. axillaris*. *Triana* gives the vernacular name as "amargo."

Cephaelis tomentosa (Aubl.) Vahl, Eclog. Amer. 1: 19. 1796. *Tapogomea tomentosa* Aubl. Pl. Guian. 1: 160. 1775.

Only a single collection of this common species was reported in the recent enumeration of the Rubiaceae of Ecuador. One additional record may be reported: Ecuador: Zamora, January, 1882, *Poortmann* 349 (Herb. Paris).

One collection from Colombia also is worthy of citation, because the label supplies a local name for the plant: Colombia: Chocó and Barbacoas, 70 m., *Triana 1633* (Herb. Paris). Vernacular name, "boca de sapo."

Cephaelis setifera Standl. Field Mus. Bot. 7: 80. 1930.

The following additional collections have been examined recently: Colombia: Servitá, Villavicencio, Llano de San Martín, *Karsten* (Herb. Leningrad). Between Servitá and Villavicencio, Prov. Bogotá, 400–1,000 m., *Triana 1636* (Herb. Paris).

Cephaelis bella, sp. nov.—Frutex omnino glaber, ramulis gracilibus teretibus viridibus, vetustioribus olivaceis, internodiis brevibus vel elongatis; stipulae erectae persistentes virides in vaginam truncatam 2–2.5 mm. longam connatae, dorso setis subulatis 2 brevissimis onustae; folia breviter petiolata opposita, petiolo gracili 6–10 mm. longo; lamina crasse membranacea elliptica vel late ovato-elliptica 9.5–13.5 cm. longa 4–8 cm. lata acuta vel abrupte acuta, basi acuta vel acuminata vel saepius abrupte contracta et longe angustaeque decurrens, supra laete viridis, costa venisque pallidis prominentibus, subtus paullo pallidior, costa gracili prominente, nervis lateralibus utroque latere c. 9 obliquis angulo latiusculo abeuntibus gracilibus prominentibus arcuatis juxta marginem conjunctis, nervulis prominulis laxè reticulatis; inflorescentia terminalis capitata 3–7 mm. longe pedunculata erecta, capitulis bracteis 4 magnis involucrentibus, bracteis exterioribus viridibus ovato-orbicularibus 1.5–2.5 cm. longis et aequilatis, apice acutis vel rotundatis et subulato-mucronatis, basi late rotundatis vel truncatis, sequentibus 2 paullo minoribus, intimis reductis late ovatis viridibus acutis; flores sessiles; hypanthium glabrum cylindraceum 1 mm. longum, calyce aequilongo campanulato pallido remote et obscure denticulato; corolla extus glabra in alabastrò obtusa, tubo 9–13 mm. longo crassiusculo supra paullo sensim dilatato fauce 3.5 mm. lato, lobis 5 oblongo-triangularibus obtusiusculis 4 mm. longis intus glabris.—Peru: Puerto Arturo, Yurimaguas, lower Río Huallaga, Dept. Loreto, alt. 155–210 m., November 10, 1929, in forest, *Llewellyn Williams 5207* (Herb. Field Mus. No. 614,352, type); November 15, 1929, edge of forest, *Williams 5071*.

A handsome plant because of the neat form of the inflorescence and the bright green color of the leaves and bracts; not very closely related to any of the other Peruvian species of the genus.

Cephaelis oinochrophylla, sp. nov.—Frutex 1.5 m. altus ramosus, ramis gracilibus subteretibus et bisulcatis glabris, internodiis 6–7 cm. longis; stipulae persistentes breviter connatae late ovatae 1–1.5 cm. longae abrupte acuminatae glabrae, acumine apice breviter bifido; folia crasse membranacea brevissime petiolata opposita, petiolo crassiusculo 3–8 mm. longo glabro; lamina elliptico-

oblonga 15-20 cm. longa 4.5-7.5 cm. lata subabrupte breviuscule acuminata, acumine angusto attenuato, basi acuta vel acutiuscula, supra in sicco fusco-viridis, glabra, costa venisque prominentibus vel prominulis, subtus in sicco intense rubro-purpurea, tantum ad venas minutissime puberula vel fere omnino glabra, costa gracili elevata, nervis lateralibus utroque latere c. 12 gracillimis prominentibus angulo fere recto abeuntibus arcuatis prope marginem conjunctis, nervulis prominentibus transversis et subparallelis vel laxe reticulatis; inflorescentia terminalis subcapitata longe pedunculata, pedunculo gracili glabro 3.5-5 cm. longo erecto et recto; inflorescentia e capitulis 3 dense paucifloris sessilibus vel brevissime pedunculatis composita, basi bracteis 2 late rotundatis 10-12 mm. longis apice late rotundatis vel abrupte apiculatis basi plus minusve saccatis fulcrata, bracteis interioribus subaequilongis apice truncatis vel latissime rotundatis, intimis angustioribus late spathulatis; flores sessiles, hypanthio cylindraceo 1 mm. longo glabro; calyx late campanulatus glaber 1.2 mm. longus ad medium vel profundius 5-lobus, laciniis ovatis, oblongis vel late ovatis acutiusculis; corolla extus glabra in alabastro apice rotundata anguste tubuloso-infundibuliformis, tubo 8-9 mm. longo supra sensim dilatato ore 2.5 mm. lato, lobis 5 triangularibus c. 1 mm. longis obtusis patentibus vel subreflexis intus sparse breviterque villosis; antherae ut stylus inclusae.—Peru: Tierra Blanca, lower Río Morona, middle Marañón, Dept. Alto Amazonas, alt. 160 m., in forest, January 10, 1925, *G. Tessmann 4913* (Herb. Berol., type).

The collector supplies the following notes: Bracts more or less deep brownish lilac; peduncles often almost wholly lilac; lower surface of the leaves colored a beautiful lilac; corolla white. The species may be recognized immediately by the brightly colored under surface of the leaf blades.

Psychotria marginata Sw. Prodr. Veg. Ind. Occ. 43. 1788.

Although this is one of the most widely distributed of the American species of *Psychotria*, it has not been reported, so far as I know, from Mexico. The following collection has been seen recently: Mexico: Teapa, Tabasco, *Linden* (Herb. Paris); flowers yellowish green.

Psychotria involucrata Sw. Prodr. Veg. Ind. Occ. 45. 1788.

In the *Trees and Shrubs of Mexico* this common American species was reported only from the state of Veracruz. As indicated by the following collections, it occurs also in Oaxaca: Without locality, in 1842, *Liebmann* (Herb. Paris). Cordillera of Oaxaca, 900 m., in 1840, *Galeotti 7182* (Herb. Kew.).

Psychotria patens Sw. Prodr. Veg. Ind. Occ. 45. 1788.

Reported in Mexico previously only from the state of Chiapas.

The following collection is referable to the species: Tabasco: Near Atasta, August, 1889, *J. N. Rovirosa 571* (Herb. Kew.).

Psychotria limonensis Krause, Bot. Jahrb. Engler 54: Beibl. 119: 43. 1916.

This species usually is easily recognized, but it approaches some of the forms of *P. trichotoma* Mart. & Gal., and certain specimens are about intermediate between the two. *Psychotria limonensis* Krause has been recorded in Mexico only from Chiapas, but the following collection is typical: Tabasco: Near Atasta, May, 1888, *J. N. Rovirosa 156* (Herb. Kew.); a shrub 3-4 m. high, common in the arroyo of Tapijuluya.

The species may be reported also from Nicaragua: Chontales, 1867-68, *R. Tate 209 (334)* (Herb. Kew.).

Psychotria canephorantha Wernham, Journ. Bot. 55: 338. 1917.

This very distinct species, based on *Spruce 4120* from Tarapoto, Peru, of which the writer has seen two sheets, has been known heretofore only from the original collection. The following additional specimens were collected in 1929: Peru: Tarapoto, a shrub in forest, *Williams 6159, 6110, 5820, 5389, 6511*. Juan Guerra, near Tarapoto, *Williams 6872*.

Cephaelis Duckei, sp. nov.—Frutex 2-3-metralis ramosus, ramulis gracilibus subteretibus viridibus dense pilis multicellularibus elongatis patentibus pallidis villosis, internodiis 1-4 cm. longis; stipulae in vaginam 3-4 mm. longam dense villosam subtruncatam connatae, vagina in lobos 4 erectos triangulari-oblongos 1.5 mm. longos erectos desinente; folia membranacea mediocria breviter petiolata opposita, petiolo gracili 4-7 mm. longo dense villosa; lamina oblanceolata-oblonga vel anguste elliptico-oblonga 9-10.5 cm. longa 2.5-3.5 cm. lata longiuscule subabrupte acuminata, acumine angusto attenuato, basin versus longe attenuata, supra laete viridis, sparse pilis longis gracillimis patentibus villosa, costa venisque non elevatis, subtus fere concolor, sparse pilis longis patentibus villosopilosa, costa pallida gracili elevata, nervis lateralibus utroque latere c. 6 gracillimis prominentibus angulo acuto adscendentibus subarcuatis marginem fere attingentibus, nervulis obscuris laxae reticulatis; inflorescentia terminalis sessilis capitata 3-4-flora, bracteis c. 7 involucreta, floribus sessilibus; bracteae aurantiacae lineari-oblongae flores subaequantes 3-3.5 cm. longae 5-6 mm. latae acutae vel breviter acuminatae, basin versus paullo angustatae, utrinque, extus densius, villosopilosae, suberectae; calyx tubulosus 1 cm. longus 5-6 mm. latus pilosus breviter dentatus; corolla alba extus dense pilis longis gracilibus pallidis villosa, tubo crasso 2.5 cm. longo 5-6 mm. lato,

lobis 4 patentibus lanceolato-oblongis 6–7 mm. longis 2–3 mm. latis acutiusculis intus glabris; antherae subexsertae oblongo-lineares 3–4 mm. longae.—Brazil: In silvis non inundatis prope flumen Aramá in regione Breves aestuarii amazonici, State of Pará, November 29, 1922, A. Ducke 18828 (Herb. Berol., type).

The plant is a strikingly distinct one, of no clear specific affinity. It must be an exceptionally showy shrub when growing. It is noteworthy for the few-flowered inflorescence, subtended by narrow, almost or quite distinct, brightly colored bracts, and for the unusually large, densely hairy corollas.

Cephaelis hastisepala (Muell. Arg.), comb. nov. *Psychotria hastisepala* Muell. Arg. in Mart. Fl. Bras. 6^o: 350. pl. 54. 1881.

Cephaelis appendiculata (Muell. Arg.), comb. nov. *Psychotria appendiculata* Muell. Arg. in Mart. Fl. Bras. 6^o: 350. 1881.

Cephaelis trichocephala (Poepp. & Endl.), comb. nov. *Psychotria trichocephala* Poepp. & Endl. Nov. Gen. & Sp. 3: 32. pl. 238. 1845.

Cephaelis biternata (Muell. Arg.), comb. nov. *Psychotria biternata* Muell. Arg. in Mart. Fl. Bras. 6^o: 366. 1881.

Cephaelis glabrescens (Muell. Arg.), comb. nov. *Psychotria glabrescens* Muell. Arg. in Mart. Fl. Bras. 6^o: 363. 1881.

Cephaelis horridula (Muell. Arg.), comb. nov. *Psychotria horridula* Muell. Arg. in Mart. Fl. Bras. 6^o: 344. pl. 53, f. 2. 1881.

Cephaelis involucrans (Muell. Arg.), comb. nov. *Psychotria involucrans* Muell. Arg. in Mart. Fl. Bras. 6^o: 365. 1881.

Cephaelis phyllocalymmoides (Muell. Arg.), comb. nov. *Psychotria phyllocalymmoides* Muell. Arg. in Mart. Fl. Bras. 6^o: 374. 1881.

Cephaelis Humboldtiana Cham. Linnaea 4: 136. 1829. *Psychotria Humboldtiana* Muell. Arg. in Mart. Fl. Bras. 6^o: 333. 1881.

For the typical form of the species Mueller (loc. cit.) lists only the type specimen, from Venezuela. The following collection from Brazil agrees perfectly with a photograph of the type (ex Herb. Berol.) in the herbarium of Field Museum: Brazil: Upper Rio Negro, 1907–8, Weiss & Schmidt (Herb. Kew.).

Psychotria axillaris Willd. Sp. Pl. 1: 962. 1797.

Colombia: Villavicencio, Prov. Bogotá, 300 m., 1851–57, J. Triana 1699 (Herb. Paris).

Psychotria Marcgraviella, sp. nov.—Frutex 60 cm. altus, ramulis gracilibus sparse ramis teretibus dense ferrugineo-hispidulis, internodiis plerumque 1–1.5 cm. longis; stipulae erectae persistentes lineari-lanceolatae c. 3 mm. longae ferrugineo-hispidulae; folia fere

sessilia opposita, petiolo 1–1.5 mm. longo hispidulo; lamina membranacea oblonga 3–4.4 cm. longa 1–1.5 cm. lata acuta basi late rotundata et cordata, sinu 1–2 mm. longo, supra viridis, ad costam ferrugineo-pilosa, aliter glabra, costa prominula, venis inconspicuis, subtus paullo pallidior, tantum ad costam ferrugineo-pilosula, costa gracili prominente, nervis lateralibus utroque latere c. 6 tenerrimis angulo acuto adscendentibus subarcuatis inconspicuis; inflorescentia terminalis 2 cm. longe pedunculata cymoso-corymbosa c. 2 cm. longa et 3–4 cm. lata, laxe pauciflora, basi trichotoma, ramis gracillimis subpatentibus glabris, bracteis subulatis usque ad 1 mm. longis, pedicellis gracillimis glabris 2–4 mm. longis; hypanthium obovoideum 0.7 mm. longum glabrum; calyx glaber profunde 4-dentatus, dentibus triangularibus acutis; corolla ochroleuca in alabastro obtusa extus glabra, tubo crassiusculo 2.5 mm. longo supra paullo sensimque dilatato, lobis 4 anguste oblongis obtusis recurvis tubo duplo brevioribus; antherae inclusae; stylus breviter exsertus.—Peru: In forest, Mishuyacu, near Iquitos, Dept. Loreto, alt. 100 m., October–November, 1929, G. Klug 494 (Herb. Field Mus. No. 612,606, type).

In the appearance of the branches and foliage the plant suggests a diminutive juvenile form of some of the *Marcgravia* species, hence the specific name. This *Psychotria* is a relative of *P. tenuicaulis* Krause, also Peruvian, but from that, as well as from most other Peruvian species, it is easily distinguishable by the cordate leaf bases.

***Psychotria huallagae*, sp. nov.**—Frutex, ramulis crassiusculis ochraceis glabris, novellis viridibus, internodiis valde abbreviatis; stipulae persistentes suberectae fere ad basin bifidae, basi late rotundatae, laciniis lineari-filiformibus attenuatis glabris; folia brevissime petiolata opposita, petiolo glabro 1–2 mm. longo; lamina membranacea oblanceolato-oblonga vel anguste elliptico-oblonga 6–11 cm. longa, 1.8–4 cm. lata, abrupte acuta vel breviter acuminata, acumine acuto, basin versus paullo angustata, basi ipsa acuta, glabra, supra in sicco griseo-viridis, costa venisque subprominentibus, subtus fere concolor, costa gracili elevata, nervis lateralibus utroque latere c. 12, ceteris paullo tenuioribus brevioribusque subparallelis interpositis, angulo fere recto abeuntibus, pallidis, prominentibus, gracilibus, prope marginem conjunctis, nervulis prominulis laxe reticulatis; inflorescentia terminalis graciliter 3 cm. longe pedunculata cymoso-paniculata, c. 2 cm. longa et 3.5 cm. lata, late pyramidalis, ramis oppositis viridibus patentibus, cymis paucifloris densis, floribus sessilibus vel subsessilibus, bracteis infimis subulatis, ceteris deciduis; calyx glaber ad apicem baccae persistens breviter 5-dentatus; fructus subglobosus vel late ellipsoideus c. 5 mm. longus obscure costatus glaber, pyrenis 2 facie interiore planis.—Peru: Puerto Arturo, Yurimaguas, lower Río Huallaga, Dept. Loreto, alt. 155–210 m., November 20, 1929, Llewellyn Williams 5265 (Herb. Field Mus. No. 614,356, type).

Psychotria Klugii, sp. nov.—Frutex 1.5 m. altus, ramulis crassiusculis subteretibus vel obtuse tetragonis glabris in sicco fuscis, internodiis plerumque 1–2 cm. longis; stipulae persistentes laxae suberectae ovali-ovatae c. 1 cm. longae acutiusculae glabrae fere liberae; folia petiolata opposita, petiolo crassiusculo 1.3–3.5 cm. longo glabro; lamina anguste lanceolato-oblonga 23–31 cm. longa 7–8.5 cm. lata longe angustaque attenuato-acuminata, acumine angustissimo, basin versus longe attenuata, crasse membranacea, glabra, supra opaca, costa venisque subprominentibus, subtus paullo pallidior, dense et minutissime pallido-puncticulata, costa gracili elevata, nervis lateralibus utroque latere c. 12 angulo acuto vel latiusculo adscendentibus prominentibus gracilibus arcuatis marginem attingentibus, nervulis vix prominulis laxe reticulatis; inflorescentia terminalis c. 6 cm. longe pedunculata, e capitulis c. 6–10 mm. longe pedunculatis umbellatim dispositis composita, pedunculis sordidopuberulis, capitulis c. 1 cm. latis dense paucifloris, bracteis exterioribus 6–8 mm. longis late ovatis vel ovalibus obtusis glabris basin versus breviter angustatis; flores albi sessiles; hypanthium late obovoideum 1.5 mm. longum glabrum, calyce c. 0.6 mm. longo obsolete repando-denticulato; cetera ignota.—Peru: In forest, Mishu-yacu, near Iquitos, Dept. Loreto, alt. 100 m., January, 1930, G. Klug 835 (Herb. Field Mus. No. 612,590, type); October–November, 1929, Klug 519.

The plant bears no very close resemblance to any species with which I am familiar. The very large and long and narrow leaves are unusual.

Psychotria tarapotensis, sp. nov.—Frutex, ramulis gracillimis teretibus vel novellis in sicco compressis pallide viridibus glabris, internodiis elongatis; stipulae erectae persistentes fere liberae bipartitae, laciniis linearibus viridibus glabris; folia subsessilia opposita, petiolo 1–2 mm. tantum longo; lamina firme membranacea elliptica vel elliptico-oblonga 6.5–12 cm. longa 2.5–5.5 cm. lata abrupte acuminata, acumine anguste triangulari attenuato-acuto, basi acuta vel interdum abrupte contracta et decurrens, lucida, glabra, supra in sicco viridis, costa venisque prominentibus, subtus paullo pallidior, costa gracili elevata, nervis lateralibus utroque latere c. 10 angulo acuto adscendentibus gracillimis prominentibus arcuatis marginem fere attingentibus, nervulis pallidis prominulis laxe reticulatis; inflorescentia terminalis 1.5–4 cm. longe pedunculata capitata erecta, pedunculo gracili hispidulo vel glabrato, capitulo dense paucifloro e capitulis secundariis 3 composito, capitulis lateralibus usque ad 2 mm. longe pedunculatis, bracteis exterioribus lanceolatis ut videtur viridibus 10–14 mm. longis attenuatis breviter pilosulis patentibus, floribus sessilibus congestis; hypanthium late obovoideum c. 1 mm. longum glabrum, calyce 0.3 mm. longo glabro remote inaequaliter denticulato; corolla extus hispidula, tubo gracili 5 mm. longo, lobis patentibus oblongis intus prope basin hispidulis vix 2 mm. longis obtusis; antherae exsertae anguste oblongae 1.5 mm. longae.—Peru:

Tarapoto, Dept. San Martín, alt. 750 m., December 9, 1929, *Llewelyn Williams* 5888 (Herb. Field Mus. No. 614,224, type); December, 1929, *Williams* 5867, 6497.

Related to *P. bahiensis* Muell. Arg. and *P. flavicans* Muell. Arg., both of which are Brazilian. In those species the inflorescence is recurved or nodding rather than erect.

***Psychotria nudiceps*, sp. nov.** Frutex metralis fere omnino glaber, ramulis gracilibus fuscis vel olivaceis subteretibus vel novellis in sicco subcompressis glabris, internodiis elongatis; stipulae erectae subadpressae persistentes in vaginam glabram utroque latere brevissime mucronatam vel subtruncatam connatae; folia breviter petiolata opposita, petiolo gracili c. 1 cm. longo; lamina membranacea oblonga vel elliptico-oblonga 9–19.5 cm. longa 3–6.5 cm. lata abrupte breviter acuminata, acumine anguste triangulari attenuato acuto, basin versus longiuscule angustata vel interdum abrupte contracta et longe decurrens, glabra, supra viridis, costa venisque prominulis, subtus vix pallidior, costa gracili elevata, nervis lateralibus utroque latere c. 12 angulo lato divergentibus gracillimis prominulis fere rectis vel leviter curvis prope marginem conjunctis, nervulis prominulis arcte reticulatis; inflorescentia terminalis capitata sessilis vel rare 1 cm. longe pedunculata, capitulis solitariis simplicibus dense multifloris c. 1 cm. latis, floribus arcte sessilibus, bracteis ad basin capitulorum nullis vel minutissimis; hypanthium late obconicum glabrum 0.7 mm. longum, calyce late campanulato truncato c. 1 mm. longo glabro; corolla lutea extus glabra in alabastro anguste ovoidea acutiuscula, tubo late cylindraceo 2.5 mm. longo supra non dilatato in fauce dense albo-barbato, lobis 5 triangulari-oblongis patentibus vel subreflexis tubo paulo brevioribus acutiusculis intus glabris; antherae lineares 1.5 mm. longae subexsertae. —Peru: Tarapoto, Dept. San Martín, alt. 360–900 m., February 21, 1930, *Llewelyn Williams* 6600 (Herb. Field Mus. No. 614,571, type). Punchana, near Iquitos, 120 m., October, 1929, *Williams* 3775. Mishuyacu, near Iquitos, Dept. Loreto, 100 m., in forest, October–November, 1929, *Klug* 278, 306.

The plant here described appears to be an exceptionally distinct *Psychotria*, easily separable from any other recorded from Peru. The foliage is closely similar to that of *P. Albert-Smithii* Standl., but in that the heads are compound, and the flowers differ in several details of structure.

***Psychotria Dusenii*, sp. nov.**—Frutex vel arbor omnino glabra, ramulis gracilibus subteretibus olivaceis, internodiis plerumque 1.5–2.5 cm. longis; stipulae persistentes virides in vaginam truncatam 1.5 mm. longam connatae, vagina in lacinias 4 lineari-subulatas 1.2 mm. longas erectas remotas desinente; folia longiuscule petiolata opposita, petiolo gracili 8–18 mm. longo; lamina crasse membranacea sublucida oblongo-elliptica vel ovato-elliptica 4.5–7.5 cm. longa

1.7-3.3 cm. lata subabrupte et longiuscule acuminata, acumine angusto attenuato obtuso, basi acuta, costa venisque supra prominulis, subtus paullo pallidior, costa gracili elevata, nervis lateralibus utroque latere c. 9 angulo latiusculo adscendentibus gracillimis prominulis arcuatis prope marginem conjunctis, nervis tenuioribus gracillimis inter primarios interpositis et eis subparallelis; inflorescentia terminalis sessilis et basi foliis 2 reductis fulcrata vel basi nuda et 2.5 cm. longe pedunculata, cymoso-corymbosa, basi trichotoma, 3-5 cm. longa et 3.5-5.5 cm. lata, laxa, pauciflora, ramis primariis trifloris, flore centrali sessili, lateralibus graciliter 3-14 mm. longe pedicellatis, bracteis subulatis persistentibus 2-5 mm. longis; hypanthium anguste obovoideum 1.5 mm. longum; calyx tubuloso-infundibuliformis 7-13 mm. longus supra paullo dilatatus, lobis 3 late ovali-ovatis obtusis interdum apiculatis tubo c. duplo brevioribus, calyce in sicco purpurascente; corolla caerulea anguste infundibuliformis, tubo 15 mm. longo supra sensim dilatato ore 4 mm. lato, lobis 5 triangulari-ovatis acutis 6 mm. longis adscendentibus intus glabris; stamina tubo multo breviora, antheris 2.5 mm. longis; fructus ovoideus 7 mm. longus 5 mm. latus, pyrenis 2 dorso obtuse 5-costatis, facie interiore planis. Brazil (State of Paraná): Serra do Mar, Monte Alegre, in silva primaeva, alt. 1,000 m., February 8, 1904, *P. Dusen* 3497 (Stockholm herb., type). Serra do Mar, Maramby, in silva primaeva, 900 m., February, 1904, *Dusen* 3701 (S). Caiguava, in silva primaeva, 1,200 m., November, 1909, *Dusen* 8965 (S).

Psychotria Dusenii appears to be an unusually distinct species, referable to Mueller's subgenus *Solenocalyx*, and perhaps related to *P. fluminensis* Vell. From all the species of that group it differs in the 3-lobed calyx, and in the arrangement of the inflorescence, which consists of three 3-flowered cymes.

***Psychotria pycnantha*, nom. nov.** *Mapouria brachypoda* Muell. Arg. in Mart. Fl. Bras. 6^s: 422. 1888, non *P. brachypoda* St. Lag.

***Psychotria Hayatae*, nom. nov.** *P. macrophylla* Hayata, Icon. Pl. Formos. 9: 62. 1920, non R. & P., 1799.

Palicourea guianensis Aubl. Pl. Guian. 1: 173. pl. 66. 1775.

When the account of the Rubiaceae was prepared for the writer's *Trees and Shrubs of Mexico*, no Mexican specimens of this widespread species had been seen. Two collections have been examined recently: Mexico: In umbrosis prope Atasta, Tabasco, July, 1889, *J. N. Rovirosa* 535 (Herb. Kew.). Cordillera of Oaxaca, June, 1840, *H. Galeotti* 2640 (Herb. Paris).

Palicourea albiflora Standl. Field Mus. Bot. 7 118. 1930.

A second collection for this species may be placed on record:

Colombia: La Ceja, forest of Quindío, Prov. Mariquita, 3,000 m., 1851-57, *J. Triana 1674* (Herb. Paris).

Palicourea caprifoliacea Wernham, Journ. Bot. 55: 340. 1917.

The type is *Linden 1080*, the definite locality of which has not been published heretofore. According to a specimen in the Paris herbarium, the data are the following: Colombia: Quindío, Prov. Mariquita, alt. 1,200 toises, February, 1843, *J. Linden 1080*.

Palicourea lyristipula Wernham, Journ. Bot. 55: 339. 1917.

The species was based on *Linden 1081*, the exact locality of which was not known. According to a specimen in the Paris herbarium, the data are as follows: Colombia: Quindío, alt. 1,300 toises, *J. Linden 1081*. Flowers bright yellow.

Palicourea stenoclada (Muell. Arg.), comb. nov. *Psychotria stenoclada* Muell. Arg. in Mart. Fl. Bras. 6^b: 254. 1881.

The type is *Poeppig 2578* from Ega, Brazil. It is well matched by the following collection: Brazil: Marary, Rio Juruá, Amazonas, September, 1900, *E. Ule 5127a* (Herb. Berol., a fragm. in Herb. Field Mus.; Herb. Kew.); a shrub 3 m. high, the slender branches pendent; corolla at first pinkish white, becoming bright violet; calyx and rachis orange.

Palicourea corymbifera (Muell. Arg.), comb. nov. *Psychotria corymbifera* Muell. Arg. in Mart. Fl. Bras. 6^b: 247. pl. 35. 1881.

The species has been known only from the upper Amazon in Brazil and from southern Venezuela. It may be reported now from Peru, and two recent Brazilian collections may be recorded:

Peru: Mishuyacu, Dept. Loreto, 100 m., in forest, in 1930, *G. Klug 1311*; a shrub 2 m. high; flowers violet.—Brazil: Manaus, State of Amazonas, 25 m., in dense forest, October, 1929, *Killip & Smith 30141, 30104*; a tree 4.5-7.5 m. high; branches of inflorescence and calyx bright yellow; corolla red.

Palicourea fulgens (Muell. Arg.), comb. nov. *Psychotria fulgens* Muell. Arg. in Mart. Fl. Bras. 6^b: 257. 1881.

Palicourea coriacea (Cham.) Schum. in E. & P. Nat. Pfl. 4^a: 115. 1891. *Patabea coriacea* Cham. Linnaea 9: 234. 1835. *Psychotria xanthophylla* Muell. Arg. in Mart. Fl. Bras. 6^b: 255. 1881.

In addition to the few collections of this well-marked species cited in the *Flora Brasiliensis*, there may be listed the following specimens:

Brazil: Amada Chapada, Matto Grosso, in 1902, *A. Robert 670* (Herb. Berol.). Rio Pardo, in 1826, *Riedel 571* (U. S. Nat. Herb.).

Prov. Minas Geraes, 1816–21, *Auguste de Saint-Hilaire 513* (Herb. Paris). Minas Geraes, in 1838, *Claussen 665* (Herb. Paris). Goyaz, in 1844, *Weddell 2631* (Herb. Paris).

Palicourea lanata (Muell. Arg.), comb. nov. *Psychotria lanata* Muell. Arg. in Mart. Fl. Bras. 6^a: 249. 1881.

The species was based on *Spruce 1148* from Barra. The collector's notes (probably not available to Mueller) are as follows: Open sandy places in forest, December, 1850; shrub of 2–4 ft., slender, subsimple; corolla white, but velvety with crimson submoniliform hairs; a very pretty plant, but much eaten by insects. Several additional collections of the species may be reported:

Brazil: Manaos, December, 1874, *Traill 427* (Herb. Kew., Herb. Paris); a shrub 1 m. high; perianth carmine, yellow-tipped, the anthers white, the style yellow. Cultivated at Rio de Janeiro, *Glaziov 9894* (Herb. Kew.). Environs de Manaos, in 1906, *M. Labroy* (Herb. Paris). Igaripe Tarauma, Rio Negro, west of Manaos, *D. T. Gwynne Vaughan 18* (Herb. Kew.); a small tree 3.5–6 m. high; flowers deep red; leaves tough and leathery.

Palicourea rigida HBK., var. *aurata* (Mart.), comb. nov. *Palicourea aurata* Mart. Reise 1: 544. 1823. *Psychotria rigida* Willd. var. *aurata* Muell. Arg. in Mart. Fl. Bras. 6^a: 231. 1881.

Palicourea subaeneo-fusca (Muell. Arg.), comb. nov. *Psychotria subaeneo-fusca* Muell. Arg. in Mart. Fl. Bras. 6^a: 464. 1881.

Palicourea rudgeoides (Muell. Arg.), comb. nov. *Psychotria rudgeoides* Muell. Arg. in Mart. Fl. Bras. 6^a: 463. 1881.

Palicourea pachypodina (Muell. Arg.), comb. nov. *Psychotria pachypodina* Muell. Arg. in Mart. Fl. Bras. 6^a: 463. 1888.

Rudgea caribaea Benth. Linnaea 23: 460. 1850.

Neither the genus nor the species is reported from the Virgin Islands in Britton and Wilson's *Descriptive Flora of Porto Rico and the Virgin Islands*. In the Paris herbarium, however, there is a specimen of this species labeled as having been collected on St. Thomas in 1841 by Finlay (No. 73).

Rudgea marginata Standl. Field Mus. Bot. 7: 154. 1930.

Locality data may now be reported for one of the collections cited with the description of this species: Colombia: Ibagué, Prov. Mariquita, 1,300 m., *Triana 1687* (Herb. Paris). An additional specimen also may be cited: Colombia: Sierra Nevada de Santa Marta, 900 m., July, 1926, *Arnold Schultze 447* (Herb. Berol.); a characteristic plant along the ascent from Santa Marta to Cincinnati, at 800–1,000 m.; a shrub up to 3 m. high; inflorescence yellowish white; flowers white, fragrant.

Rudgea fimbriata (Benth.) Standl. in Standl. & Cald. *Lista Pl. Salv.* 274. 1925. *Psychotria fimbriata* Benth. in Hook. *Journ. Bot.* 3: 226. 1841.

In the enumeration of the Rubiaceae of Colombia only two collections of the species were cited, both without definite locality data. The place of collection of one of the numbers listed may now be supplied: Colombia: Anapoima, Prov. Bogotá, 700 m., *Triana 1692* (Herb. Paris).

Only two collections of the species have been reported from Ecuador, both from El Recreo. Two others may now be placed on record: Ecuador: Guayabamba, March, 1877, *M. Vidal-Sénège* (Herb. Paris). San Carlos, *Vidal-Sénège* (Herb. Paris).

Rudgea loretensis Standl. *Field Mus. Bot.* 8: 230. 1930.

Described from the Department of Loreto, Peru, this species may be reported now from Amazonian Brazil: Juruá Miry, Rio Juruá, July, 1901, *Ule 5672* (Herb. Berol., Herb. Kew.); a shrub 1–5 m. high; flowers white.

Rudgea microcarpa (R. & P.), comb. nov. *Coffea microcarpa* R. & P. *Fl. Peruv.* 2: 66. *pl.* 218. 1799.

There is in the herbarium of Field Museum a photograph and fragment of a specimen in the Berlin herbarium which, presumably, is authentic material of *Coffea microcarpa* R. & P. It was collected in 1787 by Ruiz "in Peruviae Andium nemoribus ad Patasaria," the type locality. The specimens cited below agree with the type, and are clearly referable to the genus *Rudgea*.

Peru: Soledad, Lower Itaya, Dept. Loreto, 110 m., *Tessmann 5311* (Herb. Berol.); a shrub 3 m. high, the trunk 5 cm. in diameter; corolla mostly white. Soledad, in dense forest, *Killip & Smith 29695*; a shrub 3–4.5 m. high. Yurimaguas, Dept. Loreto, 135 m., in dense forest, *Killip & Smith 27989*; a shrub; fruit pure white. Between Yurimaguas and Balsapuerto, Loreto, in forest, *Killip & Smith 28078*. Yurimaguas, in forest, a small shrub, *Williams 4534*.

Rudgea hispidula Standl. *Field Mus. Bot.* 8: 226. 1930.

Only the single type collection was reported when this species was published, but there may be recorded now the following additional specimens, previously overlooked or only recently received:

Peru: Puerto Arturo, lower Río Huallaga, Dept. Loreto, 155–210 m., a shrub in forest, November, 1929, *Williams 5050*. Santa Rosa, Yurimaguas, lower Río Huallaga, November, 1929, a shrub in or at the edge of forest, *Williams 4863, 4753*. Sapote Yacu, Santa Rosa, November, 1929, a shrub in forest, *Williams 4870*. Yurima-

guas, lower Río Huallaga, November, 1929, a small shrub in forest, *Williams 4663*. Yurimaguas, in forest, a shrub 1-1.5 m. high, the fruit white, *Killip & Smith 27644, 27632*.

Rudgea villiflora Schum. in herb., sp. nov.—Frutex, ramulis crassis subteretibus ochraceis, novellis dense pilis longis pallidis villosis-pilosis, internodiis vulgo folia aequantibus vel paullo brevioribus; stipulae magnae deciduae c. 12 mm. longae late oblongae pallidae dense subadpresso-hirsutae, dorso prope apicem ut quoque ad basin setis numerosis rigidis 3-5 mm. longis instructae; folia brevissime petiolata opposita, petiolo crasso 4-8 mm. longo hirsuto; lamina coriacea oblonga, obovato-oblonga vel elliptico-oblonga, rarius anguste oblanceolato-oblonga, 5.5-12.5 cm. longa, 2-5.5 cm. lata, acuta vel obtusa, basi rotundata, rare versus basin acutam sensim angustata, supra luteo-viridis vel cinerascens, glabra, costa venisque non elevatis, subtus multo pallidior, minute denseque puncticulata, ubique pilis gracillimis pallidis hirsuta vel serius glabrata, costa gracili elevata, nervis lateralibus utroque latere c. 11 angulo lato abeuntibus gracilibus prominulis remote a margine conjunctis, nervulis obscuris; inflorescentia terminalis cymoso-paniculata saepe corymbiformis 2-6 cm. longa 2-10 cm. lata dense multiflora, interdum condensata, 2.5-5 cm. longe pedunculata, ramis basalibus oppositis vel verticillatis patentibus usque ad 2.5 cm. longis, dense villosis-hirsutis, bracteis filiformibus villosis usque ad 6 mm. longis, floribus dense congestis sessilibus vel subsessilibus; hypanthium obovoideum dense villosum; calyx 5-partitus, laciniis anguste lineari-attenuatis 4-5 mm. longis extus longe villosis; corolla extus pilis longissimis pallidis multicellularibus villosa, tubo gracili c. 3 cm. longo supra sensim dilatato ore 4 mm. lato, lobis linearibus vel anguste lanceolatis 5-6 mm. longis attenuatis intus glabris; stamina fere 1 cm. longe exserta, antheris oblongis 2.5 mm. longis; fructus ovali-globosus 7-8 mm. longus sparse villosis-hirsutus apice subtruncatus, pyrenis 2 dorso obtuse grosseque 5-costatis, facie interiore planis.—Brazil: São Francisco, Santa Catharina, in forest, October, 1884, *Ernst Ule 353* (Herb. Berol., type; photograph and fragment in herb. Field Mus., No. 607,286). Inter Alexandra et Serra da Prata, Paraná, in silva primaeva, August, 1910, *Dusén 10156* (Stockholm herb.). Guaratuba, Paraná, in silvula, December, 1911, *Dusén 13795* (S). Alexandra, Paraná, in silva primaeva, May, 1909, *Dusén 8102* (S); December, 1909, *Dusén 8673* (S). Santos, in silva litorali subhumida, in 1875, *H. Mosén 3181* (S).

In Mueller's key to the species of *Rudgea* in the *Flora Brasiliensis* this plant runs at once to *R. magnoliaefolia* (Cham.) Muell., but in that the leaves and branches are glabrous.

Rudgea parquiioides (Cham.) Muell. Arg. Flora 59: 450. 1876.
Coffea parquiioides Cham. Linnaea 9: 224. 1834.

The species appears to be rather common in southern Brazil, and

it extends to Paraguay and even to Argentina. The following are some of the specimens examined recently:

Brazil: Desvio Ribas, Paraná, border of forest, *Dusen* 1148a. Jaguarihyva, Paraná, in forest, *Dusen* 10599. Pinhaes, Paraná, 885 m., *Dusen* 13351 (Herb. Stockholm). Itaparussú, Paraná, 880 m., *Dusen* 7102 (S). Hamburgerberg, Rio Grande do Sul, in silva primaeva minus densa, *Malme* 216 (S); a shrub 2-3 m. high, sparsely branched. Neu-Württemberg, Rio Grande do Sul, 550 m., in forest, *Bornmüller* 338 (Herb. Berol.).—Paraguay: In regione fluminis Alto Paraná, *Fiebrig* 5414 (Herb. Kew., Herb. Paris).—Argentina: Misiones, in distr. urb. Posadas, praecipue in vicin. coloniae Bonpland, *Lilliesköld* (S).

Rudgea celastrinea Muell. Arg. Flora 59: 450. 1876.

Brazil: Caldas, Minas Geraes, November, 1854, *Regnell* III.111** (Herb. Berol., probably type collection). Without locality, *Burchell* 3066 (Herb. Paris). Rio de Janeiro, *Miers* 3905 (Herb. Paris).

Mitracarpus rigidifolius, sp. nov.—Suffrutescens perennis, caulis erectis ramosis teretibus vel subangulatis ferrugineis rigidis glabris, internodiis plerumque foliis brevioribus; vagina stipularis 2.5-3 mm. longa adpressa ferruginea glabra, margine truncato setis paucis subulatis erectis 1-2 mm. longis onusto; folia sessilia opposita et in axillis fasciculata anguste linearia vel interdum lineari-oblonga glabra 1.5-3.5 cm. longa vulgo 1-1.6 mm. lata glaucescentia supra minutissime puncticulata acuminata basin versus paullo angustata crassa et rigida, marginibus valde revolutis; flores capitati, capitulis terminalibus solitariis longipedunculatis 10-13 mm. diam., densissime multifloris, basi bracteis 4 vel pluribus foliis conformibus et aequilongis fulcratis, bracteis reflexis, floribus arcte sessilibus, bracteolis filiformibus calycem aequantibus glabris; hypanthium obovoideum vix 1 mm. longum glabrum basi cuneatum; sepala alte connata, majoribus 1.7-2.2 mm. longis erectis viridibus triangulari-subulatis rigidis acuminatis, minoribus 2 hyalinis plus quam duplo brevioribus; corolla extus minutissime obscure puberula, tubo cylindraceo crassiusculo 3-4 mm. longo supra non dilatato, lobis 4 ovato-ovalibus fere 1 mm. longis patentibus obtusis intus puberulis; antherae oblongae subexsertae; stylus corollam aequans glaber breviter bifidus; capsula late obovoidea c. 2.5 mm. longa glabra paullo infra medium circumscissa, seminibus late obovoideis ventre leviter excavatis.—Brazil: Serra do São Ignacio, Estado de Bahia, February, 1907, *E. Ule* 7559 (Herb. Kew., type).

Apparently conspecific, although with somewhat broader leaves, is *Ule* 7481, from Serra Branca, Piahy, collected in January, 1907 (Herb. Kew.). Related to *Mitracarpus Lhotzkyanus* Cham., but distinguishable at a glance by the very narrow and rigid leaves.

Mitracarpus recurvatus, sp. nov.—Fruticulus ramosus subpulvinatus, ramis crassissimis usque ad 10 cm. longis paucis densissime

foliatis subtetragonis ferrugineis vel fuscis hispidulis, internodiis validissime abbreviatis; vagina stipularis brevissima setis c. 3 rigidis pallidis erectis glabris longioribus onusta; folia densissime conferta opposita sessilia acerosa e basi angusta sensim attenuata recurva, 3-5 mm. longa, prope basin 1 mm. lata, utrinque densiuscule setoso-hispidula, 1-nervia, costa subtus prominente crassa pallida, marginibus valde incrassatis pallidis; flores ex foliis superioribus pauci solitarii vel glomerati sessiles vel brevissime pedicellati, bracteolis filiformibus pallidis glabris flores aequantibus; hypanthium dense albo-villosulum obovoideum; sepala 4 basi connata viridia 1-1.5 mm. longa subinaequalia lanceolata rigida erecta attenuata albo-marginata villosulo-ciliata; corolla extus glabra vel obscure puberula calycem vix superans, tubo anguste cylindraceo fere 2 mm. longo supra non dilatato, lobis 4 subrotundatis c. 0.7 mm. longis patentibus intus puberulis; capsula c. 1.5 mm. longa villosula prope medium circumscissa.—Brazil: Goyaz (?), *A. Glaziov* 21511 (Herb. Kew., type).

The material available for study, although complete, is not ample, and the plants are so far past flowering that it is difficult to determine satisfactorily the characters of the inflorescence. There is no doubt, however, that the plant is a *Mitracarpus*, referable to Schumann's subgenus *Mitrathamnus*, and that it is altogether different from any species known heretofore from Brazil.

Mitracarpus anthospermoides Schum. in Mart. Fl. Bras. 6^o: 86. 1888.

Schumann cited a single collection for this species, *Blanchet* 1867, from Bahia. A photograph of the type is in the herbarium of Field Museum. One additional collection has come to the writer's attention: Brazil: Ilheos, *Moricand* 1867 (Herb. Kew.).

Staelia scabra (Presl), comb. nov. *Diphragmus scaber* Presl, Bot. Bemerk. 81. 1844. *Spermacoce asperifolia* Mart. & Gal. Bull. Acad. Brux. 11¹: 132. 1844. *Borreria asperifolia* Robinson, Proc. Amer. Acad. 45: 409. 1910.

Mexico: Acapulco, in 1895, *Palmer* 253. Imala, in 1891, *Palmer* 1734. Colima, in 1891, *Palmer* 937 (Herb. Kew.).

The genus *Staelia* is a small one, which heretofore has been supposed to be confined to central and southern South America. This Mexican plant, however, apparently should be referred to *Staelia*. In most species of the genus the central partition of the fruit is persistent, the cells separating from it and circumscissile obliquely near the base. In the Mexican plant the cells seem not to be circumscissile, but they separate from the partition, leaving it as a conspicuous object among the persistent bracts.

Staelia filifolia Rusby, Mem. Torrey Club 4: 209. 1895.

One additional collection of the species has been examined recently: Bolivia: Misiones Guarayos-Santa Cruz de la Sierra, Dept. Santa Cruz, 300 m., *Werdermann 2605* (Herb. Stockholm).

Staelia Hassleri, nom. nov. *S. filifolia* Chod. & Hassl. Bull. Herb. Boiss. II. 4: 190. 1904, non Rusby, 1895.

Richardia tricoeca (T. & G.), comb. nov. *Diodia tricoeca* T. & G. Fl. N. Amer. 2: 30. 1841. *Diodia tetracocca* Hemsl. Biol. Centr. Amer. Bot. 2: 56. 1881. *Crusea allococca* Gray, Proc. Amer. Acad. 19: 78. 1883. *Richardsonia tricoeca* Schum. ex Loes. Repert. Sp. Nov. 18: 362. 1922. *Richardsonia tetracocca* Schum. ex Loes., loc. cit.

As Gray long ago pointed out, the plants named *Diodia tricoeca* and *D. tetracocca* are to be considered as mere variants of the same species.

Richardia rigidifolia (Krause), comb. nov. *Richardsonia rigidifolia* Krause, Notizbl. Bot. Gart. Berlin 8: 103. 1922.

The type is *Weberbauer 5502* from Ayacucho, Peru. Clearly conspecific is the following additional collection: Peru: Mountains east of Palca, Prov. Tarma, Dept. Junín, 2,700–3,000 m., February, 1903, *Weberbauer 2437* (Herb. Berol.). Corolla white with purplish tips.

Richardia lomensis (Krause), comb. nov. *Richardsonia lomensis* Krause, Bot. Jahrb. Engler 40: 348. 1908.

Richardia pedicellata (Schum.), comb. nov. *Richardsonia pedicellata* Schum. in Mart. Fl. Bras. 6^o: 97. 1888.

A photograph of the type, collected near Itu, São Paulo, by Langsdorff and Riedel, is in the herbarium of Field Museum. It is perhaps worth while to record the following additional collections of this comparatively rare species:

Brazil (State of Paraná): Jaguarihyva, in campo, 740 m., *Dusén 10718* (Stockholm herb.), *10721* (S), *13178* (S). Ponta Grossa, in campo, *Dusén 10358* (S). Itararé, in campo, *Dusén 10992* (S). Capão Grande, in campo, April 14, 1909, *Dusén* (S). Capão Bonito, in campo, *Dusén 16914* (S). Lago, in campo, *Dusén 2589* (S).—Paraguay: Cordillera de Villa Rica, *Hassler 8775* (F, a fragment from Herb. Berol.).

Diodia subulata (DC.), comb. nov. *Borreria subulata* DC. Prodr. 4: 543. 1830. *Crusea subulata* Gray, Proc. Amer. Acad. 19: 78. 1883.

As already pointed out by Schumann (in E. & P. Nat. Pflanzenfam. 4^e: 142. 1897), this plant should be referred to the genus *Diodia*,

rather than to *Crusea*, where it has been placed by most American writers.

Diodia rosmarinifolia Pohl ex DC. Prodr. 4: 564. 1830.

This species is known from Brazil and Venezuela. In most characters it resembles closely *Diodia teres* Walt., so closely, in fact, that it is questionable whether it is more than a variety of that widespread species. It is distinguished chiefly by having the fruit glabrous or almost so, but in *D. teres* the pubescence of the fruit varies notably.

The following Central American collection, apparently referable here, represents a great extension of range: Guatemala: Praderas áridas de Guatemala, 1,400 m., July, 1921, *A. Tonduz 614* (Herb. Berol.). The Guatemalan plants are noteworthy in having corollas as much as 9 mm. long.

Diodia cymosa Cham. Linnaea 9: 217. 1834.

The species was based upon *Sello 5336*, represented in the herbarium of Field Museum by a photograph and fragment from the Berlin herbarium. The specimen was collected somewhere in southern Brazil, but without definite locality data. The following collection gives at least one definite locality for the plant: Brazil: Calmon, State of Paraná, March 15, 1910, *Dusen 9269* (Stockholm herb.).

Diodia paradoxa Cham. Linnaea 9: 216. 1834.

Numerous specimens of the species have been cited from Brazil, but it may be worth while to report the following collection from Argentina: Misiones, in distr. urb. Posadas, praecipue in vicin. coloniae Bonpland, *W. Lilliesköld* (F, Herb. Stockholm).

Diodia macrophylla Schum. in Mart. Fl. Bras. 6^o: 401. 1889.

The only collection reported for this species by Schumann was the type, *Gardner 3243*, from Goyaz, a photograph of which is in the herbarium of Field Museum. The following additional specimens have been seen by the writer: Brazil: Without locality, *Burchell 6484* (Herb. Kew.), *8580* (Herb. Kew.), *7813* (Herb. Kew.). Natividade, Goyaz, in open sandy places, November, 1839, *Gardner 3241* (Herb. Kew.); December, 1839, *Gardner 3242* (Herb. Kew.).—Paraguay: Y-acá, *Hassler 6714*.

Diodia brasiliensis Spreng., var. ***microphylla*** (C. & S.), comb. nov. *D. polymorpha* C. & S., var. *microphylla* C. & S. Linnaea 3: 345. 1828.

The following collection, obtained well outside the usual range of the plant, is worthy of record: Argentina: Misiones, in distr. urb. Posadas, praecipue in vicin. coloniae Bonpland, *W. Lilliesköld* (Herb. Stockholm).

Borreria ocimoides (Burm.) DC. Prodr. 4: 544. 1830. *Spermacoce ocimoides* Burm. Fl. Ind. 34. pl. 13, f. 1. 1768. *S. Pringlei* Wats. Proc. Amer. Acad. 25: 152. 1890.

The type of *Spermacoce Pringlei* is *Pringle 2464* from Guadalajara, Mexico. The plant is evidently *Borreria ocimoides*. The leaves of the type material are broader than is usual in that species, but they are matched by the foliage of many southern specimens.

Borreria latifolia (Aubl.) Schum.—Although one of the common weedy species of the lowlands of many parts of tropical America, and frequent in southern Central America, this plant is not plentiful in northern Central America, and I do not know that it is recorded from Mexico or from British Honduras. It may, however, be reported now from the latter country: British Honduras: In open places, All Pines, at sea level, September, 1930, *W. A. Schipp 656*. The collector states that the plant is employed locally for treating snake bites, for which it can scarcely be a very dependable remedy.

Borreria Brittonii, nom. nov. *B. saxicola* Britt. & Millsp. Bahama Fl. 422. 1920, not Krause, 1908.

Borreria alata (Aubl.) DC. Prodr. 4: 544. 1830. *Spermacoce alata* Aubl. Pl. Guian. 1: 60. pl. 22, f. 7. 1775.

In the *Flora Brasiliensis* Schumann reports this species only from the Guianas, but it has a much wider range, as proved by the following specimens: Peru: Río Itaya, *Williams 139*. Caballo Cocha, Dept. Loreto, in forest, *Williams 2033*. Near Iquitos, Dept. Loreto, a weed in pasture, *Williams 1487*.—Brazil: State of Matto Grosso, Cuyabá, *Malme 3186* (Herb. Stockholm).

Borreria densiflora DC. Prodr. 4: 542. 1830.

This species, which is fairly common in northern South America and ranges as far southward as Argentina, seems to be rare in Brazil. Schumann listed it only in the addenda of the Rubiaceae of the *Flora Brasiliensis*, citing a single collection from Ceará. It is, therefore, worth while to report the following additional records: Brazil: Near Pelotas, Rio Grande do Sul, November, 1901, *Malme* (Herb. Stockholm). Livramento in caatinga, Ceará, March, 1910, *Löfgren 174* (Herb. Stockholm).

Borreria Balansae, sp. nov.—Herba perennis e radice lignosa crassa, caulibus erectis vel adscendentibus gracilibus simplicibus vel parce ramosis glabris plus minusve angulatis, angulis interdum angustissime alatis, internodiis saepe foliis paullo longioribus; stipulae virides breviter connatae, vagina vix 1 mm. longa seta 1 erecta glabra 1-2 mm. longa onusta, setis brevioribus vel brevissimis 2 vel pluribus adjectis; folia opposita subsessilia vel brevissime petiolata crasse membranacea in sicco luteo-viridia, petiolo lato marginato glabro 1-2 mm. longo; lamina lanceolato-oblonga, ovata vel oblongo-elliptica, 10-23 mm. longa, 5-8 mm. lata, acuta vel obtusiuscula, basi acuta, supra glabra vel prope marginem sparsissime scaberula, enervia, subtus paullo pallidior, glabra, costa gracillima prominente, nervis lateralibus utroque latere 2-3 angulo acutissimo adscendentibus obscuris, nervulis obsoletis; flores capitati, capitulis dense multifloris depresso-globosis 10-13 mm. latis basi bracteis 2 foliaceis foliis caulinis paullo brevioribus fulcratis, floribus arcte sessilibus, bracteolis lineari-subulatis calyce multo brevioribus; hypanthium turbinatum glabrum 2 mm. longum basi acutum; calyx 4-partitus glaber, laciniis 3-4 mm. longis erectis viridibus lineari-oblongis attenuatis acuminate; corolla caerulea extus glabra 6-7 mm. longa infundibuliformis fere ad medium 4-loba, lobis suberectis triangulari-ovatis obtusis; antherae breviter exsertae; stigma capitatum. Paraguay: Prairies de Pastoreo-mi(?), à l'Est de la Cordillère de Villa-Rica, September 24, 1874, *B. Balansa 1763* (Herb. Kew., type).

Because of the yellow-green tint assumed by the foliage when dried, and on account of the blue color of the corolla, this plant, if it really is a *Borreria*, is allied with such species as *B. latifolia* (Aubl.) Schum. and *B. poaya* (St. Hil.) DC. From those well-known plants it differs conspicuously in its perennial root and wholly terminal flower heads. The fruit of the single sheet seen is quite immature, and it is impossible to determine its exact nature, but it is improbable that the plant is a *Mitracarpus*, and still less probable that it is a species of *Diodia*.

Borreria vulpina, sp. nov.—Herba annua erecta c. 8 cm. alta ramosa, ramis gracilibus ferrugineis dense fulvo-pilosis, internodiis foliis subaequalibus; vagina stipularis tenuis lata c. 2 mm. longa dense pilosa, margine setis numerosis erectis rufescentibus glabris 3-5 mm. longis onusto; folia breviter petiolata membranacea opposita, petiolo lato basi paullo dilatato 1-2 mm. longo piloso; lamina anguste elliptico-oblonga vel anguste oblongo-lanceolata 12-25 mm. longa 5-7 mm. lata basi et apice acuta, utrinque pilis longis rigidiusculis fulvis vel rufescentibus patentibus vel subadpressis densiuscule pilosa, in sicco pallide viridis, costa gracili rufescente subtus prominente, nervis lateralibus utroque latere 3-4 angulo acutissimo adscendentibus gracillimis prominentibus, interdum fere trinervia, marginibus planis; flores in capitula terminalia longe pedunculata congesti arcte sessiles, capitulis densissime multifloris 7-8 mm. latis, basi brac-

teis 4 breviter connatis foliis conformibus fulcratis, bracteolis linearibus vel fere filiformibus calycem aequantibus; hypanthium lineari-clavatum glabrum 1.5–1.8 mm. longum ferrugineo-lineolatum versus basin longe attenuatum; calyx 4-partitus, laciniis lineari-attenuatis 1.4–1.7 mm. longis ferrugineo-lineolatis longe ciliatis erectis; corolla alba, tubo gracili extus glabro fere 3 mm. longo supra non dilatato, lobis 4 ovalibus obtusis fere 1 mm. longis obtusis extus prope apicem sparse hispidulis patentibus; antherae breves oblongae exsertae; stigma capitatum integrum vel brevissime bilobum; capsula oblonga vel anguste oblonga 2–2.5 mm. longa glabra vel tantum prope apicem pilosula tenuis pallida, plus minusve ferrugineo-lineolata. — Brazil: Coxipó da Ponte, Cuyabá, March, 1911, *F. C. Hoehne 2802* (Herb. Berol., type).

The generic position of the plant is somewhat uncertain. Its general aspect, if Rubiaceae of the tribe *Spermacoceae* may be said to have a characteristic aspect, suggests the genus *Mitracarpus*. The fruits are not fully mature, but there is no suggestion that they are circumscissile, and this character usually is discernible in plants of the genus *Mitracarpus* immediately after anthesis. The fruit has much thinner walls than is usual in *Borreria*, but it is difficult to see how the plant may be referred to any of the related genera. In *Borreria* it is unusual because of its abundant, often rufous pubescence, somewhat suggestive of that of *Borreria argentea* Cham., which, however, is a much larger and stouter plant.

***Borreria valens*, sp. nov.**—Herba robusta, caulibus simplicibus 40 cm. longis et ultra crassis subteretibus fusco-ferrugineis glabris, internodiis elongatis sed vulgo foliis brevioribus; vagina stipularis 6–11 mm. longa ferruginea adpressa glabra, margine truncato setis numerosis glabris erectis 1–1.5 cm. longis onusto; folia breviter petiolata opposita subcoriacea, petiolo lato et marginato glabro usque ad 8 mm. longo; lamina lanceolato-oblonga vel anguste elliptico-oblonga 7–8.5 cm. longa 2–3.5 cm. lata acuta vel breviter acuminata basi acuta, supra in sicco griseo-viridis glabra vel prope marginem sparse scaberula, venis profunde impressis, subtus pallidior, ad venas aculeolato-scaberula, costa gracili elevata, nervis lateralibus utroque latere c. 6 angulo angustissimo adscendentibus leviter curvis vel fere rectis valde prominentibus, nervulis obsoletis; flores sessiles capitati, capitulis densissime multifloris terminalibus et ex axillis 1–2 superioribus, 1.5–1.8 cm. diam., capitulo terminali basi bracteis 4 foliis conformibus et aequilongis basi brevissime connatis fulcrata, bracteolis filiformibus calycem fere aequantibus sparse villosulis; hypanthium obovoideum 1.5 mm. longum prope apicem villosulum; calyx 4-partitus, laciniis 1–1.5 mm. longis erectis rigidiusculis lineari-subulatis viridibus sparse minute pilosulis; corolla extus glabra late infundibuliformis 2.5–3 mm. longa fere ad medium 4-loba, lobis ovato-triangularibus acutiusculis intus glabris; stamina exserta; stigma capitatum; capsula oblonga 2.5 mm. longa prope apicem sparse villosula tenuis, saepe

sparsely ferrugineo-lineolata; semina matura non visa.—Brazil: Rio Claro, Minas Geraes, June, 1840, *Gardner 4744* (Herb. Kew., type).

I have not been able to find ripened seeds with either of the two sheets examined, but it is probable that they are transversely sulcate, and that the plant is related, therefore, to *Borreria laevis* (Lam.) Griseb., a common tropical weed, which it much resembles in general appearance. *B. laevis*, however, is usually a much smaller plant, with decidedly smaller flower heads, and with very short calyx lobes. Gardner states that *B. valens* is suffrutescent and sometimes three feet high.

***Borreria clinopodioides*, sp. nov.**—Herbacea ut videtur perennis, caulibus gracilibus ramosis 40–50 cm. longis et ultra viridibus vel ochraceis, pilis laxis brevibus albidis patentibus vel interdum subreflexis pilosulis, internodiis foliis multo longioribus; stipulae in vaginam 2–3 mm. longam subtruncatam pallidam tenuem pilosulam connatae, vagina setis paucis vel numerosis c. 2 mm. longis erectis rigidis ferrugineis onusta; folia membranacea petiolata opposita, petiolo gracili 4–7 mm. longo pilosulo vel puberulo; lamina ovato-oblonga vel elliptico-oblonga 3–5.5 cm. longa 1–2 cm. lata acuta basin versus angustata, interdum abrupte contracta et breviter decurrens, supra laete viridis densiuscule scaberula vel glabrata, venis manifestis sed non elevatis, subtus paullo pallidior, scaberula et ad nervos breviter hispidula, costa gracili elevata, nervis lateralibus utroque latere c. 4 angulo acutissimo adscendentibus obliquis gracillimis prominulis; flores arcte sessiles in capitula terminalia densissima multiflora c. 1.5 cm. lata aggregati, quoque in axillis superioribus dense aggregati, capitulis bracteis 2–4 foliis conformibus et saepe aequilongis fulcratis, bracteis basi cupula stipulari flores fere aequante connexis; calyx 4-partitus, laciniis lineari-subulatis 1.5–2 mm. longis viridibus erectis glabris vel sparse hispidulis; corolla alba 2.2 mm. longa infundibuliformis extus glabra vel sparse puberula, lobis brevibus suberectis obtusis; antherae breviter exsertae oblongae; stylus apice brevissime bilobus; capsula 2–2.3 mm. longa oblongo-obovoidea prope basin pallida glabra, supra medium dense albo-villosula.—Brazil: Corumbá, State of Matto Grosso, growing in a swamp among grasses and Cyperaceae, July 21, 1903, *G. O. A. Malmé* (Herb. Stockholm, type). Pernambuco, Gravata, July, 1926, *Bento Pickel 1123* (Herb. Berol.).

The relationship of the plant seems to be clearly with *Borreria laevis* (Lam.) Griseb., which it much resembles in general appearance. In that common weedy species the flower heads are usually smaller, and the calyx lobes are much shorter, more or less united, and generally obtuse. The describing of new species in the already too confused genus *Borreria* is not to be commended, but this Brazilian plant is fairly easy of recognition, and it can not be referred satisfactorily to any of the numerous species already described.

Borreria liliifolia, sp. nov.—Herba erecta c. 50 cm. alta valida, caulibus crassis simplicibus obtuse quadrangulatis fusco-brunneis dense puberulis vel pilosulis, internodiis folia aequantibus vel longioribus; stipulae in vaginam 2-3 mm. longam dense puberulam connatae, vagina setis numerosis pilosulis usque ad 1 cm. longis ferrugineis onusta; folia coriacea rigida adscendentia opposita sessilia, fasciculis foliorum aequilongorum numerosorum in axillis insertis; lamina anguste lanceolato-oblonga vel oblonga 2-4 cm. longa 7-12 mm. lata acuta vel breviter acuminata, basi cuneato-angustata, utrinque densissime pilis brevibus patentibus albidis velutino-pilosula, supra in sicco ferruginea, venis subimpressis, subtus paullo pallidior, costa gracili prominente, nervis lateralibus utroque latere 3-4 angulo angustissimo adscendentibus gracilibus prominulis; inflorescentia terminalis pedunculata basi bracteata cymoso-corymbosa c. 9 cm. longa et 15 cm. lata, dense multiflora, fere ubique trichotoma, ramis gracilibus rigidis rectis glabris vel ad angulos minute pilosulis, bracteis lanceolatis vel subulatis patentibus plerumque 2-3 mm. longis, floribus sessilibus vel brevissime pedicellatis; hypanthium turbinatum 1 mm. longum basi acutum glabrum; calyx 4-partitus, laciniis anguste triangularibus acutis vel acuminatis paullo inaequalibus 0.7-1 mm. longis erectis; corolla alba 2.5 mm. longa extus minute pruinoso-puberula ad medium 4-loba, lobis oblongo-ovatis obtusis intus dense albo-barbatis; stamina corolla breviora, antheris brevibus late oblongis; stylus corolla multo brevior apice clavatus et brevissime bilobus.—Brazil: Ypiranga, State of São Paulo, December 31, 1911, *Alex. Curt Brade 5266* (Herb. Stockholm, type).

Subgenus *Galianthe*. Related, probably, to *Borreria valerianoides* C. & S., but distinguished by the abundant pubescence of almost all parts. The leaves, too, are distinctive, the numerous leaves of the axillary fascicles being as large as the subtending ones, the stems thus appearing to be furnished with numerous whorls of subequal leaves.

Borreria luteovirens, sp. nov.—Herba erecta elata, ut videtur 1 m. alta vel ultra, radice valde incrassata, caulibus fere simplicibus supra sparse ramosis quadrangulatis lutescentibus glabris, angulis acutiusculis vel marginatis pilis brevibus rigidis retrorsum aculeolato-hispidulis, internodiis folia subaequantibus; stipulae in vaginam adpressam 2-4 mm. longam hispidulam connatae, vagina setis paucis vel numerosis usque ad 1.5 cm. longis glabris onusta; folia subcoriacea rigida luteo-vididia sessilia opposita, fasciculis foliorum paullo reductorum in axillis saepe insertis; lamina lanceolato-oblonga vel anguste lanceolata 4-7 cm. longa 1-2 cm. lata longe sensimque acuminata, basi obtusa vel acutiuscula, supra dense scabra et aspera, venis profunde impressis, subtus pallidior, densiuscule hispidula et ad venas pilis aculeoliformibus crassiusculis instructa, costa gracili elevata, nervis lateralibus utroque latere c. 5 valde elevatis angulo angustissimo adscendentibus; inflorescentia terminalis cymoso-corymbosa basi foliaceo-bracteata 7-20 cm. longa et

aequilata, dense multiflora, inferne trichotoma, ramis dichotomis crassiusculis ad angulos aculeolato-hispidulis, floribus arcte sessilibus, bracteis lanceolatis vel subulatis plerumque 2–5 mm. longis; hypanthium turbinatum 1 mm. longum minute pruinoso-puberulum vel glabrum basi acutum; calyx 4-partitus, dentibus minutis interjectis, laciniis anguste triangulari-subulatis 2 mm. (vel usque ad 3 mm.) longis attenuatis erectis glabris; corolla alba 3–4 mm. longa in alabastro apice late obtusa, glabra vel prope apicem obscure puberula, ad medium 4-loba, lobis obtusis intus barbatis; stamina exserta, antheris oblongis 1 mm. longis; stylus breviter exsertus vel inclusus, stigmatibus clavatis; capsula oblonga vel turbinato-oblonga 4–4.5 mm. longa glabra basi obtusa vel acutiuscula.—Brazil (State of Rio Grande do Sul): Cachoeira, in palude, January 12, 1902, G. O. A. Malme 1060 (Herb. Stockholm, type). Cruz Alta, in palude, January 16, 1902, Malme 1131 (Herb. Stockholm).

This species of the subgenus *Galianthe* is noteworthy for the yellowish green color of its dried foliage, its large capsules, and especially for its short, harsh pubescence, consisting in large part of recurved, prickly-like hairs.

The collector states that the plant is heterostylous, and the same condition prevails in other species of the genus. Schumann separated two groups of the subgenus *Galianthe* by the nature of the stigma, whether entire and capitate or clavate, or bifid. Probably this character is not of specific importance.

Borreria fastigiata (Griseb.) Schum. in Mart. Fl. Bras. 6^o: 68. 1888. *Galianthe fastigiata* Griseb. Symb. Fl. Argent. 157. 1879.

Brazil (State of Rio Grande do Sul): Cruz Alta, in campis, praesertim in graminosis, January 15, 1902, Malme 1084 (Herb. Stockholm); January 16, 1902, Malme (Herb. Stockholm). Pinhal, prope Santa Maria, in campis, January 27, 1902, Malme (Herb. Stockholm).

Borreria Chodatiana, sp. nov. *B. thalictroides* Schum., var. *latifolia* Chod. & Hassl. Bull. Herb. Boiss. II. 4: 189. 1904.

It may be that this species differs from *B. thalictroides* only in the form of its leaves, but these are so distinctive in outline that at first glance one would never associate the two forms. In this difficult group of the genus *Borreria* it is desirable to simplify the work of identification as much as possible, and for that reason it seems preferable to accord specific rank to the broad-leaved plant. The following specimens of *B. Chodatiana* have been examined:

Paraguay: Sierra de Maracayú, Hassler 5168 (F, type collection).—Brazil (State of Paraná): Tamanduá, in campo, P. Dusén 10825 (Herb. Stockholm). Curitiba, in campo, Dusén 3474 (S), 13384 (S).

Borreria thalictroides Schum. in Mart. Fl. Bras. 6^o: 71. 1888.

The species was based upon *Sello 217* and *4901*, collected somewhere in southern Brazil. A photograph and fragment of the former number (from the Berlin herbarium) are in the herbarium of Field Museum. Conspecific are the following Brazilian collections in the Stockholm herbarium: Paraná: Jaguariahyva, in campo, November, 1914, *Dusén 16033*; in campo, alt. 730 m., November, 1910, *Dusén 10364*.

In the typical form of the species the narrowly linear leaves are 1.5–2 cm. long. Among the *Dusén* Brazilian Rubiaceae there are three specimens of plants which have much longer and relatively even narrower leaves. The stems are leafy quite to the base of the inflorescence, while in the typical form the stems are naked above. I see no other differences between these forms, however, and the plant with long leaves may be distinguished as a variety:

Borreria thalictroides Schum., var. *longifolia*, var. nov.—A forma typica non nisi foliis multo longioribus plerumque 3–5 cm. longis rigidiusculis vix 1 mm. latis differt.—Brazil (State of Paraná): Serrinha, in campo, alt. 840 m., December 7, 1908, *P. Dusén 7303* (Stockholm herb., type); January 3, 1915, *Dusén 16269* (S.). Villa Velha, in campo, 875 m., February 24, 1910, *Dusén 9446* (S.).

Borreria leiophylla Schum. in Mart. Fl. Bras. 6^o: 66. 1888.

Brazil: Cachoeira, Rio Grande do Sul, in campo aprico sat parce graminoso, February, 1893, *Malme 642, 644* (Herb. Stockholm).—Paraguay: Without locality, *Bettfreund 972* (Herb. Berol.). In alto-planitie Yeruti, *Hussler 5757* (Herb. Berol.).

Borreria centranthoides C. & S. Linnaea 3: 328. 1828.

Brazil: Quinta prope Rio Grande, State of Rio Grande do Sul, in fruticeto minus denso, loco arenoso, December, 1892, *Malme 402* (Herb. Stockholm).

Borreria equisetoides C. & S. Linnaea 3: 338. 1828.

The species seems to be rare, being represented in the herbarium of Field Museum only by a specimen of the original collection, obtained by Sello. The plant is a striking one, the fistulose stems, after the leaf blades have fallen, resembling closely those of the larger species of *Equisetum*. One additional collection has come to hand recently: Brazil: Fazenda Horticola (Schönwald), Rio Pardo, Rio Grande do Sul, alt. 70 m., January, 1927, *C. Jürgens 48* (Herb. Berol.). Growing in cultivated ground; plants up to 1.8 m. high; vernacular name, "canellão de viado." The capsules, which are not described in the *Flora Brasiliensis*, are oblong or elliptic-oblong,

2-2.5 mm. long, obtuse at the base, brownish fuscous, and glabrous, with the triangular or narrowly triangular, very short calyx segments persistent at the apex.

Borreria mitreoloides, sp. nov.—Herba erecta elata usque ad 1 m. alta et ultra ramosa, caulibus crassiusculis obtuse quadrangulatis glabris vel tantum prope nodos sparse scaberulis, internodiis plerumque foliis longioribus; stipulae in vaginam puberulam vel scaberulam 2.5-5 mm. longam connatae, vagina setis numerosis 5-15 mm. longis brunnescentibus scaberulis onusta; folia crasse membranacea breviter petiolata opposita, petiolo usque ad 1.5 cm. longo interdum fere nullo minute pilosulo vel glabrato; lamina magna lanceolato-oblonga vel ovato-lanceolata plerumque 6-10 cm. longa et 2-4 cm. lata, longe sensimque acuminata, basi acuta, supra laete viridis, inter venas scaberula vel fere glabra, venis impressis, subtus discolor, sparse scaberula, ad nervos vulgo sparse breviterque pilosula, costa gracili elevata, nervis lateralibus utroque latere c. 6 obliquis subarcuatis prominentibus gracilibus; inflorescentia terminalis vel interdum quoque axillaris cymoso-corymbosa dense multiflora 4-7 cm. longa 6-15 cm. lata basi trichotoma, ramis repetite dichotomis dense multifloris, floribus sessilibus vel brevissime pedicellatis saepe plus minusve secundis, ramis crassiusculis parce minutissime pilosulis, bracteis in setas numerosas c. 1 mm. longas divisas; hypanthium obovoideum 0.8 mm. longum basi acutiusculum sparse minute albido-hirtellum; calyx 4-partitus, laciniis crassis erectis anguste triangularibus acutis fere glabris 0.8 mm. longis glaucescentibus; corolla extus glabra in alabastro apice obtusa fere 3 mm. longa ad medium 4-loba, laciniis late oblongis obtusis intus dense barbatis; stamina breviter exserta; stylus c. 3.5 mm. longus apice brevissime bilobus, lobis ellipticis obtusis; capsula late oblonga vel obovoidea 2-2.5 mm. longa basi obtusa sparse scaberula.—Brazil (State of Matto Grosso): Serra da Chapada, in silva sat clara, June 2, 1903, G. O. A. Malme (Herb. Stockholm, type). Aricá prope Cuyabá, May 8, 1903, Malme 3275 (Herb. Stockholm).

Evidently a relative of *B. valerianoides* C. & S., but the inflorescence in the latter is altogether different in arrangement. In that species, moreover, the leaves are much narrower and the calyx segments longer and narrower.

Relbunium ovale (R. & P.) Schum. in Mart. Fl. Bras. 6^o: 115. 1888. *Galium ovale* R. & P. Fl. Peruv. 1: 59. 1798. *Rubia ovalis* DC. Prodr. 4: 591. 1830. *Rubia diffusa* Pohl ex DC. Prodr. 4: 592. 1830. *Relbunium diffusum* Schum. in Mart. Fl. Bras. 6^o: 111. 1888. *Relbunium Bangii* Rusby, Bull. N. Y. Bot. Gard. 4: 374. 1907.

There is at hand a fragmentary specimen of what is probably type material of *Galium ovale* R. & P., received from the Botanical Garden of Berlin, and collected by Ruiz in the Huánuco region of Peru. It agrees perfectly with material which has been referred

heretofore to *Relbunium diffusum* (Pohl) Schum., and it is evident, therefore, that the latter must be reduced to synonymy.

Schumann in the *Flora Brasiliensis* maintained both as valid species, separating them by their different color when dried. The color seems to be a good distinguishing character when specimens are dried properly. The type material of *Galium ovale* is rather dark, rather than yellowish green, but I am convinced that this is merely because Ruiz's specimen discolored somewhat from improper drying.

The species is rather common in the Andes, and occurs also in Brazil. The following specimens have been examined:

Peru: Huánuco, Ruiz. Chaupichaca, Dept. Cuzco, Weberbauer 7327. Aina, Dept. Ayacucho, Killip & Smith 22617. Chorrillos, Raimondi 6870 (fragm. ex herb. Berol.). Chanchamayo Valley, Schunke 1541.—Bolivia: Tipuani Valley, Buchtien 7511. Milluguaya, Buchtien 766. Yungas, Bang 269, 518. Coripati, Bang 2154. Sirupaya, Buchtien 252. Polopolo, Buchtien 281; in 1912, Buchtien; Buchtien 4728. Ixiamas, R. S. Williams 276.—Brazil: Curityba, Paraná, Jänssan 182a (herb. Stockholm). Serra do Mar, Paraná, Dusén 14594 (Stockholm). Banhado, Paraná, Jänssan 634a (Stockholm). Serrinha, Paraná, Dusén 3149 (Stockholm). Caldas, Minas Geraes, Regnell I.173b (Stockholm). Serra da Cantareira, São Paulo, Brade 5261 (Stockholm). Peupa, São Paulo, Brade 5268 (Stockholm). Poços de Caldas, Minas Geraes, Campos Novas 11368 (herb. Berol.).

Schumann in the *Flora Brasiliensis* cites Regnell I.173b as *Relbunium hypocarpium*, but the specimen seen by the writer is clearly not that species.

Relbunium Malmei, sp. nov.—Herba perennis ut videtur erecta vel decumbens, e basi ramosa, caulibus gracilibus 8–30 cm. longis pallidis lucidis acute tetragonis dense pilis elongatis albidis patentibus pilosis, internodiis elongatis plerumque foliis longioribus; folia quaternata crasse membranacea viridia in sicco fuscentia patentia sessilia vel subsessilia lineari-oblonga vel anguste lanceolato-oblonga, 6–12 mm. longa, 2–3 mm. lata, basi acuta, apicem versus sensim angustata, acuta, mucronata, utrinque dense pilis gracilibus patentibus longis pilosa, subtus paullo pallidior, 1-nervia; flores in axillis solitarii, pedicellis rectis pilosis 1–2 mm. longis; involucri phylla foliacea lineari-oblonga 3–4.5 mm. longa subaequalia foliis conformia dense pilosa baccam fere occultantia; corolla ut videtur alba glabra c. 1.5 mm. lata, lobis late ovato-triangularibus acutiusculis patentibus; bacca valde didyma 1.5 mm. longa et 2–2.5 mm. lata glabra laevis.—Brazil: Porto Alegre, Rio Grande do Sul, inter frutices, loco arenoso, September 17, 1892, G. A. Malme 42 (Herb. Stockholm, type).—Uruguay: La Sierra, Pan de Azúcar, Dept. de Maldonado, October 13, 1907, W. Herter 5215 (Herb. Berol.).

Apparently this is a relative of *Relbunium hirsutum* (R. & P.) Schum., of the Andes. That is a perennial with normally thicker and more rigid, shorter leaves and with smaller involucre bracts.

Relbunium paulense, sp. nov.—Herba ut videtur annua humilis pauciramosa 5–9 cm. alta suberecta, caulibus gracillimis rigidis pallidis glabris profunde 4-sulcatis, internodiis valde abbreviatis foliis multo brevioribus; folia quaternata crassa rigida patentia vel subreflexa densa anguste oblonga 4–5.5 mm. longa 1–1.8 mm. lata basi breviter angustata sessilia, apice acuta vel acuminata et mucronata, primo praesertim prope basin pilis paucis albis longis ciliata, aliter glabra, obscure 1-nervia, supra lucida, marginibus plus minusve revolutis; flores axillares solitarii, pedicellis 1–2 mm. longis rectis vel recurvis glabris; involucri phylla 4 subaequalia viridia oblongo-elliptica c. 1 mm. longa post anthesin paullo accrescentia acuta mucronata, pilis paucis pallidis longis ciliata; corolla fere 1 mm. longa glabra; bacca valde didyma glabra fere laevis c. 1.5 mm. longa.—Brazil: Campos da Bocaina, São Paulo, April 18, 1894, *Loefgren & Edwall 11362* (Herv. Comm. Geogr. de S. Paulo No. 2850; type in Herb. Berol.).

The species of *Relbunium* are for the most part well marked and often of wide distribution. Very few new ones have been named in recent years, because most of the material seems to be readily associable with those described long ago. The writer is somewhat loath to name the present plant, which is represented by complete although not very ample material; but it seems impossible to refer it satisfactorily to any of the species recorded from Brazil. Evidently it is related to *Relbunium ciliatum* (R. & P.) Hemsl., of the Andes, but in that the segments of the involucre are not long-ciliate. Another closely related species is *R. chaetophorum* (Griseb.) Schum., of Argentina, in which, however, the fruit is muriculate.

Relbunium humile (C. & S.) Schum. in Mart. Fl. Bras. 6^o: 105. 1888. *Galium humile* C. & S. Linnaea 3: 226. 1828.

The species was based upon *Sello 2979* from Brazil, the locality at which the collection was obtained being unknown. It is of interest to be able to record another collection of the species, which agrees perfectly with a fragment of the type in the herbarium of Field Museum, received from the Berlin Botanical Garden: Brazil: Porto Alegre, Rio Grande do Sul, *E. M. Reineck & Josef Czermak 573* (Herb. Berol.). The plant is easy to recognize because of its exceptionally delicate habit, and the pale green tint assumed by the dried foliage.

Relbunium hirtum (Lam.) Schum., var. **camporum** (Pohl), var. nov. *Galium camporum* Pohl ex DC. Prodr. 4: 604. 1830. *R.*

hirtum (Lam.) Schum., subsp. b. *camporum* (Pohl) Schum. in Mart. Fl. Bras. 6^o: 108. 1888.

Relbunium hirtum (Lam.) Schum., var. **reflexum** (Pohl), var. nov. *Galium reflexum* Pohl ex DC. Prodr. 4: 604. 1830, in syn. *R. hirtum* (Lam.) Schum., subsp. c. *reflexum* (Pohl) Schum. in Mart. Fl. Bras. 6^o: 109. 1888.

Galium obovatum HBK. Nov. Gen. & Sp. 3: 336. pl. 277. 1819.

The following additional specimens, recently examined, may be recorded from Bolivia: Prov. Chapare, Dept. Cochabamba, 2,400 m., a slender plant 30–60 cm. long, *Steinbach* 9450. Incachaca-Chusi, Prov. Chapare, 2,400 m., *Steinbach* 9155. Both specimens are in the Stockholm herbarium.

Galium Werdermannii, sp. nov.—Herba perennis dense caespitosa, caulibus numerosissimis gracillimis plerumque 3–7 cm. longis adscendentibus profunde 4-sulcatis glabris, internodiis brevissimis; folia quaternata lanceolato-oblonga vel oblongo-ovata 2.5–3.5 mm. longa 1–1.4 mm. lata crassa subrigida subpatentia vel adscendentia glabra 1-nervia saepe sublucida sessilia basi obtusa vel subangustata, apice acuta vel longiuscule sensim acuminata et mucronata, marginibus pallidis paullo incrassatis; flores axillares solitarii, pedicellis crassiusculis glabris 1–2 mm. longis; corolla non visa; bacca glabra didyma fere laevis c. 1.8 mm. longa et 2.2 mm. lata.—Chile: Prov. Cautín, Volcán Llaima, alt. 1,100 m., February, 1927, *E. Werdermann* 1224 (U. S. Nat. Herb. No. 1,444,795, type; fragment in herb. Field Museum; duplicate in herb. Stockholm).

In general appearance as well as in details the plant is similar to *Galium Closianum* Briquet, but the latter has so much longer and narrower leaves that the two are not likely to be confused.

COMPOSITAE

Lagascea media (Blake), comb. nov. *Nocca media* Blake, Contr. U. S. Nat. Herb. 22: 596. 1924.

Lagascea pteropoda (Blake), comb. nov. *Nocca pteropoda* Blake, Contr. U. S. Nat. Herb. 22: 597. 1924.

Goldmanella sarmentosa Greenm. Bot. Gaz. 45: 198. 1908. *Goldmania sarmentosa* Greenm. Field Mus. Bot. 2: 271. 1907.

The type of the single species of the genus *Goldmanella* was collected at Canasayal, Campeche, Mexico. The species extends also to British Honduras, as evidenced by the following collection: Honey Camp, Orange Walk, September, 1928, *C. L. Lundell* 17.

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REVISION OF THE GENUS COSMOS

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REVISION OF THE GENUS COSMOS (FAMILY COMPOSITAE)

EARL E. SHERFF

In the course of monographic researches during the past twenty years upon the genus *Bidens*, I have had occasion to examine many specimens of *Cosmos*, also much of the literature pertaining to that genus. Many of the larger libraries and herbaria in this country, also in Europe, were visited. The authorities in charge at these institutions proved invariably courteous and generous in placing at my disposal their numerous botanical resources. More recently a number of them have lent types or otherwise valuable materials for extended studies and comparisons. Largely as a result of this cooperation, the present revision was made possible. It is a pleasure to acknowledge here my indebtedness to these friends of science.

During the progress of the work a large set of photographs of the more important specimens was built up, and a duplicate of this set will be found in the Herbarium of Field Museum of Natural History.

For brevity, numerous exsiccatae studied are omitted, and those retained are cited with the following designations as to the herbaria of the institutions: Botanical Garden of Berlin (Berl.); University of California (Calif.); Carnegie Museum (Carn.); University of Chicago (Chi.); Delessert Herbarium (Del.); Field Museum of Natural History (Field); Gray Herbarium of Harvard University (Gray); Royal Botanical Gardens of Kew (Kew); Missouri Botanical Garden (Mo.); Natural History (Royal) Museum of Vienna (Mus. V.); New York Botanical Garden (N. Y.); Museum of Natural History of Paris (Par.); University of Pennsylvania (Penn.); Botanical Garden of Leningrad (Petrov); Academy of Natural Sciences of Philadelphia (Phila.); United States National Museum (U. S.); University of Vienna (U. V.).

Cosmos Cav. Icon. et Descript. 1: 9. 1791.—Herbae annuae perennesve, interdum elatae, glabrae vel pilosulae vel etiam hispidae; plantarum perennium radicibus saepe tuberiformibus fasciculatisque. Folia opposita, indivisa vel lobata vel semel bis terve pinnatisecta. Capitula normaliter radiata et heterogama; floribus radii 1-seriatis, neutris; disci hermaphroditis, fertilibus. Involucrum subhemisphaericum, bracteis 2-seriatis, basi connatis, membranaceis, striatis, parum inaequalibus (vel exterioribus plerumque herbaceis et interdum angustis minoribus). Receptaculum planum,

paleis planis vel concaviusculis (raro acumine filiformi terminatis) flores hermaphroditos subtendentibus onustum. Capitula majuscula vel mediocria, longe pedunculata, solitaria vel laxe corymboso-paniculata. Corollae radii ligulatae, lamina patente integra vel subdentata saepius rosea vel violacea vel purpurea rarius flava etc.; disci regulares, tubulosae, limbo cylindraceo apice breviter 5-fido. Antherae basi integrae vel vix minutissime 2-dentatae. Styli (florum hermaphroditorum) rami tenues, superne incrassati, hirti, appendicibus brevibus acutisque superati. Achaenia linearia, saepius fusiformia, plus minusve 4-gona vel rarius obcompressa vel etiam alata, superne saepius in rostrum attenuata, basim versus attenuata, basi ipsa plus minusve expansa, apice saepissime aristis 2–8 persistentibus plerumque retrorsum raro antrorsum barbellatis aculeatisve munita.¹

CLAVIS SPECIERUM

Annuae.

Achaenia aristis antrorsum hispida.

Flores ligulati flavi; achaeniis alatis 10. *C. Blakei*.

Flores ligulati violacei; achaeniis exalatis 9. *C. exiguus*.

Achaenia aristis retrorsum hamosa.

Flores ligulati albi vel rosacei nec flavi.

Ligulae perspicuae 1.5–3 cm. longae 7. *C. bipinnatus*.

Ligulae multo minores et non perspicuae.

Planta elata plerumque 0.6–2 m. alta, achaeniis (rostrum adjecto) 1.2–3.5 cm. longis 6. *C. caudatus*.

Planta minor, gracilis, achaeniis (rostrum adjecto) 9–16 mm. longis 8. *C. parviflorus*.

Flores ligulati sulphurei vel rubro-flavi, interdum basaliter rubro-maculati.

Involucri bractee exteriores valde perspicueque albo-tomentosae.

Folia (petiolo adjecto) 1–3.5 cm. longa, petiolis 0.5–1.5 cm. longis, capitulis pansis ad anthesin 1.5–2.5 cm. latis. 4. *C. microcephalus*.

Folia 4–10 cm. longa, petiolis usque ad 5 cm. longis, capitulis pansis ad anthesin 3–4 cm. latis 3. *C. ocellatus*.

Involucri bractee omnes glabrae vel subglabrae.

Ligulae saturate rubro-flavae vel aurantiacae.

5. *C. sulphureus*.

¹ Descriptio pro parte ex Benth. et Hook. Gen. Plant. 2: 387. 1873.

Ligulae sulphureae.

Achaenia rostrata, circ. 1.1–1.3 mm. crassa; foliis principalibus 4–6 cm. longis 1. *C. gracilis*.

Achaenia erostrata, 1.5–2.2 mm. crassa; foliis principalibus 6–17 cm. longis 2. *C. calvus*.

Perennes.**Ligulae flavae.**

Involucri bracteae exteriores 6–8, lineares vel parce lineari-lanceolatae, 3–5 mm. longae; ligulis obovatis. 11. *C. Landii*.

Involucri bracteae exteriores 12–16, linearissimae, 6–7 mm. longae; ligulis anguste ellipticis 12. *C. Langlassei*.

Ligulae saturate atropurpureae vel atosanguineae.

Flores disci omnino flavi 18. *C. montanus*.

Flores disci dentibus purpurei alibi valde flavi.

20. *C. scabiosoides*.

Flores disci omnino plerumque atropurpurei.

Plantae elatae, 0.9–2.5 m. altae; foliis bipinnatifidis supra obscure puberulis, subtus nervisque hirtopilosiusculis, minutissime glanduloso-rugosis 21. *C. purpureus*.

Plantae circ. 4–6 dm. altae; foliis pinnatis vel vix bipinnatisectis, non glanduloso-rugosis.

Folia (petiolo adjecto) 3–5 cm. longa, segmentis primariis linearibus 19. *C. concolor*.

Folia 7–15 cm. longa, segmentis primariis rhomboideo-ovatis.

26. *C. atosanguineus*.

Ligulae rosaceae vel violaceae vel lilacinae raro subalbidae.

Folia rigida, principalia plerumque pinnatim 3–7-partita, segmentis crassiusculis anguste linearibus, 1–2 (rariter –2.5) mm. latis 13. *C. crithmifolius*.

Folia membranacea nec rigida.

Folia simplicia, lamina (numquam late) linearia.

14. *C. linearifolius*.

Folia composita, segmentis angustissime linearibus (tantum circ. 0.2–0.5 mm. latis) 15. *C. carvifolius*.

Folia plerumque composita, segmentis latioribus.

Petoli usque ad 8 mm. longi 17. *C. Palmeri*.

Petiooli manifeste longiores.

Plantae austro-americanae. 23. *C. peucedanifolius*.

Plantae centrali- vel boreali-americanae.

Capitula pansa ad anthesin 4-8 cm. lata.

Petiooli plerumque 0.5-2 (raro -2.3) cm. longi.

Achaenia 2-aristata. 16. *C. Pringlei*.

Achaenia saepissime 4-aristata. . . 22. *C. Nelsonii*.

Petiooli 2-9 cm. longi. 24. *C. diversifolius*.

Capitula pansa ad anthesin circ. 3 cm. lata.

25. *C. Schaffneri*.

Sect. I. *Eucosmos*.¹—Herbae annuae. Flores ligulati sulphurei, aurantiaci, rosei, albi, etc. Achaenia plerumque plus minusve tetragona, nunc rostrata nunc erostrata, nunc aristata aristis retrorsum hamosis nunc calva, exalata. (Numeri 1-8.)

1. *Cosmos gracilis* Sherff, Bot. Gaz. 88: 304. 1929.

Herba annua, erecta, glabra, gracilis, infra simplex supra ramosa, 4-6 dm. alta, caule subtetragono, internodiis quam foliis multo brevioribus. Folia tenuiter petiolata petiolis parce marginatis usque ad 1.5 cm. longis, petiolo adjecto 4-6 cm. longa, bipinnatisecta, segmentis membranaceis saepius oblongo-linearibus, margine subciliatis, apice acutis, plerumque 1-3 mm. latis. Capitula tenuiter pedunculata pedunculis usque ad 16 cm. longis, non numerosa (unicae plantae circ. 5-12), pansa ad anthesin circ. 1.8 cm. lata et circ. 1 cm. alta. Involucri glabri bractee exteriores 5-7, anguste cuneato-lanceolatae, obsolete nervatae, saepe patentees, tantum 1.5-2.2 (raro -4) mm. longae; interiores oblongo-lanceolatae demum circ. 7-8 mm. longae. Flores ligulati circ. 5 vel 6, flavidi (non rubido-flavidi), ligula obovati, apice truncato-lobulati, tantum circ. 6-8 mm. longi. Paleae lineari-lanceolatae. Achaenia circ. 6-10, fusiformia, rotundato-tetragona, unaquaque facierum 1-sulcata, infra nigra glabrataque supra rostrato-angustata ac straminea erecto-hispidulaque, apice spinulis patentibus minutissimisq. coronata vel demum calva, 1.1-1.7 cm. longa et circ. 1.1-1.3 mm. crassa.

Type specimen: Collected by H. Pittier, No. 5053, at altitude of 100-350 meters, vicinity of Olá, Province of Coclé, Panama, December 7-9, 1911 (U. S.).

Distribution: Known only from type locality in Panama.

Specimens examined: *H. Pittier 5053* (type, U. S.; cotype, Gray).

Differs from *Cosmos sulphureus* Cav. in having smaller size, more delicate habit, the stem glabrous with the internodes shorter

¹Sectio nov. Includes *C. bipinnatus* Cav., the type species of the genus.

than the leaves (these smaller and less compound), the flowering and fruiting heads much smaller, the exterior involucrel bracts proportionately smaller, the rays golden yellow, not orange, etc.

2. *Cosmos calvus* (Schz. Bip. ex Miq.), comb. nov.; *Adenolepis* (*Bidens*) *calva* Schz. Bip. Flora 30: 375. 1847 (nomen subnudum); *A. calva* Schz. Bip. in Zollinger, Syst. Verzeichn. Ind. Archipel. Pflanz. 1: 123. 1854 (nom. subnudum); etiam in Miquel, Fl. Ind. 2: 79. 1856 (cum descript.); *Cosmos sulphureus* var. *leiorhynchus* Griseb. Fl. Brit. W. Ind. Isl. 374. 1861; cf. Sherff, Bot. Gaz. 80: 376. 1925; vide C. B. Clarke, Comp. Ind. 141. 1876; *Bidens artemisiaefolia* var. *calva* (Schz. Bip. ex Miq.) O. Ktze. Rev. Gen. Pl. 1: 321. 1891.

Herba erecta, annua, gracilis, glabra, ramosa, ± 6 dm. (verisimiliter usque ad 1 m.) alta. Folia bipinnatisecta vel etiam tripinnata, principalia petiolo adjecto 6–17 cm. longa, petiolis 1.5–3 cm. longis, segmentis linearibus, apice acutis, margine integris sed minutissime spinuloso-ciliatis, non crassis, 1–4 mm. latis. Capitula ramos terminantia, tenuiter pedunculata pedunculis 8–18 cm. longis, pansa ad anthesin circ. 3–3.5 cm. lata et 8–12 mm. alta. Involucri bractee glabrae, exteriores circ. 8, lineari-subulatae, ad basim 1–1.5 mm. latae, e basi usque ad apicem acutum induratumque sensim angustatae, 5–8 mm. longae; interiores lanceolato-oblongae, paulo longiores. Flores ligulati (6–) 8, sulphurei ac numquam rubido-flavidi, ligula obovato-oblongeolati, apice subdenticulati, 10–14 mm. longi. Achaeia atro-plumbea, lineari-fusiformia, obcompressa vel rotundo-tetragona, omnino manifeste 4-sulcata, glabra, supra ad apicem truncatum angustata (non vere rostrata), exaristata, 10–14 vel tantum 8 mm. longa et 1.5–2.2 mm. lata.

Type specimen: Collected by Henri Zollinger, No. 2945,¹ at altitude of 1,500–1,900 feet, in garden near Maësan, Province of Bondowosso, Java, June (Par.).

Distribution: Venezuela and Island of Trinidad; also British East India, Siam, Java, and Philippine Islands.

Specimens examined: *Ahern's Collector* (Forestry Bureau No. 3383), Province of Rizal, Luzon, Philippine Isls., November, 1905 (Mo.); *L. H. Bailey & E. Z. Bailey* 509, alt. 3,000–3,500 feet, Los Chorros, Venezuela, December 27, 1920 (Field); *M. S. Clemens* 801, Camp Keithley, Lake Lanao, Mindanao, Philippine Isls., November, 1906 (Field); *A. D. E. Elmer* 7039, Palo, Province of Leyte, Leyte, Philippine Isls., January, 1906 (N. Y.; Petrop.); *A. Fendler* 1966, vicinity of the Colony of Tovar, Venezuela, 1856–57 (Gray; Mo.; Par.; Phila.); edit. *R. F. Hohenacker* 344, near City of Mangalor, British East India, 1847 (Del., 2 sheets; Par.; U. V.; nomen vulgare Bugudi); *J. Linden* 1510, alt. 3,000 feet, savannas of Valencia, Province of Carabobo, Venezuela, December, 1843 (Del.); *idem* (similiter) 1510,

¹In his catalogue (p. 123), Zollinger gave the number 2594, but the herbarium sheets examined give it as 2945.

alt. 4,500 feet, Buena Vista, Province of Carabobo, December, 1848 (Par.); *R. C. McGregor*, Solsona, Ilocos Norte, Luzon, Philippine Isls., December, 1923 (Calif.); *E. D. Merrill 3367*, Pasacao, Province of Camarines, Luzon, November, 1903 (N. Y.); *Moritz 68*, Caracas, Venezuela (Par.); *H. Pittier 12042*, scattered in savannas, between Guanare and Portuguesa, Venezuela, December 28, 1925 (Mo.; N. Y.; U. S.); *M. Ramos & G. Edano*, Maluko and vicinity, Bukidnon Sub-province, Mindanao, Philippine Isls., July, 1920 (Calif.; Gray); *idem*, Anuling, Province of Zambales, Luzon, Philippine Isls., November–December, 1924 (Calif.); *J. R. Rock 1622*, alt. 750–900 meters, between Pang Kia and Meh Kha Chan, basin of the Meh Lao, Chiangmai Province, Siam, January 2, 1922 (U. S.); *H. Zollinger 2945* (type and cotype, Par.).

Schultz Bipontinus, in his open letter to Hohenacker (Flora, loc. cit.), mentioned first the Hohenacker plant and second the Zollinger plant. He gave no description, however. In 1856, Miquel (loc. cit.) published a description. Miquel, however, followed his description with a reference first of all to Zollinger Cat., p. 123, and secondly to "Flora bot. Zeit. 1847, p. 375," thus establishing the Zollinger plant as the effectively published type. Until recently (cf. Bot. Gaz. 80: 376. 1925), I myself was constrained to accept Grisebach's varietal status for this plant under *C. sulphureus*. During the past year, however, I have had opportunity to examine much additional herbarium material of both forms, also to cultivate many specimens of *C. sulphureus* itself. The differences between the two are found to be greater than between the two members of several other pairs of species in *Cosmos*; e.g., *C. crithmifolius* and *C. Landii*, *C. diversifolius* and *C. atrosanguineus*, *C. diversifolius* and *C. peucedanifolius*, and *C. sulphureus* and *C. caudatus*.¹

3. *Cosmos ocellatus* Greenm. Proc. Amer. Acad. 41: 265. 1905.
Folia saepius 2–3-pinnata, achaeniis biaristatis.

C. ocellatus sensu stricto.

Folia plerumque tripartita, achaeniis etiam juvenibus apice exaristatis var. *Greenmanii*.

Herba annua, erecta vel adscendens, simplex vel ramosa, hinc inde pilis articulatis instructa, 3–5 dm. alta. Folia tenuissime petiolata petiolis usque ad 5 cm. longis, petiolo adjecto 4–10 cm. longa et 1.5–5 cm. lata, saepius 2–3-pinnata, segmentis ultimis saepius oblonge lanceolato-linearibus, membranaceis, infra pallidioribus, apice acutis, marginibus ciliatis, faciebus pilis multiloculatis adpressis hispidis. Capitula pauca (plerumque 1–7), longe pedunculata pedunculis tenuibus 1–2.5 dm. longis, pansa ad anthesin 3–4 cm.

¹I am indebted to Dr. H. LeCompte of the Muséum d'Histoire Naturelle, Paris, for the loan of several specimens by Zollinger, Hohenacker, etc., for reexamination.

lata et 1-1.4 cm. alta. Involucri bracteae exteriores 7-9, pilis longis candidis articulatis valde perspicueque albo-tomentosae, adpressae, lineares, apice induratae, 5-8 (-11) mm. longae, interiores late oblongo-lanceolatae, brunneae, apice minute pubescentes alibi nunc glabratae nunc (praecipue ad medium) moderate pilosae, 7-10 (-12) mm. longae. Flores ligulati 5 vel 6 (circ. 8 ex Greenmanio), ligula obovato-oblongi, apice late emarginati, maximam partem aurei sed plerumque macula plus minusve atrosanguinea infra medium ornati, 1.2-1.7 cm. longi. Achaenia lineari-attenuata, tetragona, unaquaque facierum 1- vel 2-sulcata, infra apicem longirostrata rostro sursum hispido et supra stramineo, corpore atro ac inferne glabro (rostro adjecto) 1.6-2.2 cm. longa et circ. 0.4-0.6 mm. crassa, paleas aurantiacas apicem versus macula magna nigra maculatas demum multo superantia, apice biaristata aristis tenuibus, 1-1.6 mm. longis, retrorsum hamosis hamis elongatis albis rectis gracillimis.

Type specimen: Collected by C. G. Pringle, No. 8386 *pro parte*, at altitude of 7,500 feet, in thin soil on the knobs of the Sierra de Tepoxtlán, State of Guerrero, Mexico, October 14, 1900 (Gray).

Distribution: Known only from type locality in State of Guerrero, Mexico.

Specimens examined: C. G. Pringle 8386 *pro parte* (type, Gray; cotypes, Field; Mo., etc.).

Cosmos microcephalus (q.v.) may prove to be a depauperate form of this species.

Cosmos ocellatus var. **Greenmanii** Sherff, Bot. Gaz. 88: 305. 1929.

A specie foliis plerumque tripartitis foliolis ovato-lanceolatis serratisque, achaeniis etiam juvenibus apice exaristatis differt.

Type specimen: Collected by C. G. Pringle, No. 8386 *pro parte*, with the type of the species (Field).

Distribution: Known only from type locality in State of Guerrero, Mexico.

Specimens examined: C. G. Pringle 8386 *pro parte* (type, Field; cotypes, Mo., etc.).

4. **Cosmos microcephalus** Sherff, Bot. Gaz. 76: 89. 1923.

Herba annua, erecta, gracillima, plus minusve hispido-pubescent, caule simpliciter 2-3 dm. alto. Folia petiolata petiolis 5-15 mm. longis, petiolo adjecto 1-3.5 cm. longa, bipinnata, segmentis linearibus vel lineari-lanceolatis, plerumque acutis. Capitula solitaria, longe tenuiterque pedunculata pedunculis 8-17 cm. longis, (pro genere) parva, pansa ad anthesin 1.5-2.5 cm. lata et 8-12 mm. alta. Involucri bracteae exteriores 6-8, lineares, obtuse callosio-apiculatae, glanduloso-hispidae, 4-6 mm. longae, interiores late lanceolatae, manifeste longiores. Flores ligulati circ. 5, flavi, late obovati, apice truncati vel emarginati, 8-12 mm. longi. Achaenia tenuissime linearia, atra

vel apicem versus brunneo-straminea, superne in cervicem subcapilliformem sensim angustata, erecto-hispida, corpore (cervice adjecta) 1.6–2.2 cm. longa et inferne circ. 0.6 mm. lata, apice nunc biaristata aristis tenuibus retrorsum hamosis usque ad 2.3 mm. longis, nunc etiam calva.

Type specimen: Collected by C. J. W. Schiede, No. 1561, in cold regions, Mexico (Berl., 2 sheets).¹

Distribution: Known only from type locality in Mexico.¹

Specimens examined: *Schiede 1561* (2 type sheets, bearing about 50 specimens, Berl.).

Closest to *C. ocellatus* Greenm., with which it should be compared.

5. *Cosmos sulphureus* Cav. Icon. et Descript. 1: 56. pl. 79. 1791; cf. Safford, Journ. Wash. Acad. Sc. 8: 613. 1918; *Coreopsis artemisiaefolia* Jacq. Icon. Pl. Rar. 3: pl. 595. 1786–93; *Cosmea sulphurea* Willd. Sp. Pl. 3: 2250. 1804; *Bidens sulphurea* Schz. Bip. in Seemann, Bot. Voy. Herald 308. 1852–57; *Cosmos aurantiacus* Klatt, Leopoldina 25: 105. 1889.

Achaenia non nisi demum exaristata *C. sulphureus* sensu stricto.

Achaenia etiam juvenia exaristata var. *exaristatus*.

Herba annua, erecta, 6–21 dm. alta, caule plus minusve tetragono ac ramis pilis multiloculatis patentibus hinc inde hispidis. Folia petiolata petiolis scabrido-hispidis saepius 1–7 cm. longis, petiolo adjecto usque ad 1.5 (vel in cultu etiam ad 3.5) dm. longa, bi- vel tripinnatisecta, segmentis membranaceis linearibus vel lanceolatis, aegre obscureque spinuloso-ciliatis, acerrime apiculatis, glabris vel sparsim hispidis. Capitula pedunculos tenues 1–2 dm. longos terminantia, pansa ad anthesin 3.5–5.5 cm. lata et 1.2–1.8 cm. alta. Involucri bracteae exteriores plerumque 8, lineari-subulatae ac e basi usque ad apicem acrem sensim angustatae, tergo glabrae et 3–5-nervatae, margine saepius ciliatae, 5–7 (–10) mm. longae; interiores oblongo-lanceolatae 9–11 (–13) mm. longae. Flores ligulati circ. 8, saturate aurantiaci vel flavido-rubri, ligula obovati, apice saepe 1–5-denticulati, 1.8–2.8 cm. longi et 1–1.7 cm. lati. Paleae oblongo-lineares. *Achaenia* corpore ipso lineari-fusiformia, obcompressa vel saepissime rotundo-tetragona, omnino 4-sulcata, atra, minutissime subadpresso-hispida vel raro glabrata, 0.8–1.2 mm. lata, supra in rostrum elongatum hispidum capilliforme biaristatum vel raro triaristatum ac setuloso-coronatum angustata, omnino (aristis exclusis) 1.6–2.8 cm. longa, aristis tenuissimis late patentibus hinc inde aegre retrorsum hamosis 4.5–7 mm. longis.

¹No other data were left by Schiede, but the plants were collected between 1828 and 1836 (the dates respectively of his arrival in Mexico and of his death), and the locality lay without doubt within the triangular area reaching from Papantla and Orizaba at the east to Anganguero at the west (cf. Hemsley, Biol. Centr. Amer. Bot. 4: 128. 1886).

Type specimen: Raised from Mexican seed in the Royal Garden at Madrid, Spain, and flowering in the month of November (represented by Cavanilles' type plate).

Distribution: Mexico, almost throughout; Guatemala, Salvador, Panama, Colombia, British Guiana, and Brazil (State of Minas Geraes); often cultivated and more or less established in Florida, Bermuda, Cuba, Porto Rico, Montserrat, St. Vincent, Marianne Isls., Philippine Isls., etc.

Specimens examined: *Fr. Abbon 228*, alt. 700 meters, State of Nuevo León, Mexico, August, 1911 (U. S.); *Virlet d'Aoust 366*, State of San Luis Potosí, Mexico, 1851 (Par.); *Brother Arsène 6050*, alt. 1,600 meters, La Escalera, vicinity of Morelia, State of Michoacán, Mexico, November 6, 1911 (Gray; Mo.; N. Y.; U. S.); *G. Bernoulli 225*, in fields, Tocotenango near city of Guatemala, Guatemala, December, 1862 (Del.; N. Y.; type collection of *Cosmos aurantiacus* Klatt); *M. Botteri*, Mexico, 1856 (Del.); *idem 919*, Mt. Orizaba, Mexico (Gray); *T. S. Brandegee*, Cerro Colorado, Cofradía, vicinity of Culiacán, State of Sinaloa, Mexico, October 26, 1904 (Calif.; U. S.); *N. L. & E. G. Britton 7972*, garden, Porto Rico, February 7, 1924 (U. S.); *S. Brown, N. L. Britton, & P. Bisset 2179*, cult., Bermuda, May 22–June 6, 1914 (N. Y.); *S. Calderón 93*, San Salvador, Salvador, January, 1922 (Field; Gray; Mo.; N. Y.; U. S.); *Mr. Caley*, St. Vincent, 1817 (Del., 2 sheets); *C. Conzatti 2289*, alt. 1,800 meters, Cerro San Felipe, Distrito del Centro, State of Oaxaca, Mexico, September 20, 1908 (Field; Gray); *idem et V. González 54*, alt. 1,750 meters, State of Oaxaca, July–August, 1900 (Gray; U. S.); *J. S. De La Cruz 1066*, growing 5 feet high, Moruka River, Comaca, Pomeroun District, British Guiana, August 26, 1921 (N. Y.; U. S.); *comm. Alfredo Dugès 424A*, cult., also spontaneous, vicinity of Guanajuato, State of Guanajuato, Mexico, 1895 (Gray; nom. vulg. mirasol amarillo); *H. Galeotti 2055*, savannas, Cordillera, State of Oaxaca, Mexico, January–April, 1840 (Del.); *A. Gehrt 3283*, State of Minas Geraes, Brazil (Gray); *Ghiesbreght 289*, State of Colima, Mexico, October (Gray); *E. A. Goldman 260*, Valley of Río del Fuerte, State of Sinaloa, Mexico, October 15, 1898 (Gray; U. S.); *Brother Heriberto 363*, vicinity of Cartagena, Colombia, 1920 (U. S.); *E. W. D. Holway 3457*, Chapala, State of Jalisco, Mexico, September 19, 1899 (Gray); *W. F. Karwinsky*, Mexico (Del.); *E. P. Killip 3116*, Balboa Heights, Canal Zone, Panama, October 2, 1917 (N. Y.); *F. H. Lamb 346*, Mazatlán, State of Sinaloa, Mexico, December 29, 1894 (Gray); *Mr. & Mrs. J. G. Lemmon 91*, vicinity of Cuernavaca, State of Morelos, Mexico, 1905 (Calif.; Gray); *Liebmann 618*, Mexico, November, 1841 (Del.; Par.; U. S.); *idem 619*, Mexico (Par., 2 sheets; U. S.); *A. Luna 83*, hills of Banao, Province of Santa Clara, Cuba, January, 1920 (N. Y.); *Ynes Mexia 779*, alt. 1,100 meters, common in thickets and open places, Rincón de Mateo, near Yxtlán, State of Nayarit, Mexico, September 25, 1926 (Mo.; U. S.; nom. vulg. mirasol); *F. Müller 1017*, Mt. Orizaba, Mexico, November, 1858 (N. Y.; Par.); *E. W. Nelson 1498*, alt. 5,200–6,800 feet, Valley of

Oaxaca, State of Oaxaca, Mexico, October 2, 1894 (U. S., 2 sheets); *C. R. Orcutt 4691*, Xochimulco, Federal District, Mexico, October 4, 1910 (Field); *J. G. Ortega 80*, alt. 100 meters, La Gloria, State of Nayarit, Mexico, 1923 (U. S.; nom. vulg. mirasol); *idem 585*, alt. 480 meters, San Ignacio, State of Sinaloa, Mexico (Field); *idem 4450*, alt. 300–600 meters, La Bajada, Tamazula, State of Durango, Mexico, November, 1921 (Gray; U. S.); *idem 4815*, State of Sinaloa, Mexico, 1922 (U. S.); *idem 5265*, Sianori, State of Durango, 1924 (U. S.); *idem 6431*, Coacoylitos, State of Sinaloa, 1926 (U. S.); *E. Palmer*, Tepic, Territory of Tepic, Mexico, January 5–February 6, 1892 (U. S.); *idem 191*, Acapulco and vicinity, State of Guerrero, Mexico, October, 1894–March, 1895 (Calif.; Field, 2 sheets; Gray; Mo.; N. Y.; U. S.); *idem 442*, Río Blanco, State of Jalisco, Mexico, September, 1886 (Gray; Mo.; Phila.; U. S.); *idem 546*, Mapimi and vicinity, State of Durango, Mexico, October 21–23, 1898 (U. S.); *idem 1222*, State of Colima, Mexico, January 9–February 6, 1891 (Calif.; Gray; N. Y., 2 sheets; cf. specim. a Roseo lectum); *idem 1805*, Culiacán, State of Sinaloa, Mexico, October 25–November 18, 1891 (Field; Gray; N. Y.; U. S.); *C. G. Pringle 4516*, hillsides near Guadalajara, State of Jalisco, Mexico, September 5, 1893 (Calif.; Del., 2 sheets; Field, 2 sheets; Gray; N. Y.; Phila.; U. S.); *idem 9889 pro parte*, alt. 5,000 feet, Cuernavaca, State of Morelos, Mexico, November 12, 1902 (Field; U. S., etc.); *B. P. Reko 4568*, Guadalajara, State of Jalisco, Mexico, November, 1921 (U. S.); *J. N. Rose*, cult. e sem. a Palmero sub num. 1222 lect., 1892 (U. S.); *idem 2825*, on road between Colotlán and Bolaños, State of Jalisco, Mexico, September 7–9, 1897 (U. S.); *J. N. Rose, J. H. Painter, & J. S. Rose 10207*, near Cuernavaca, State of Morelos, Mexico, September 12–13, 1905 (U. S.); *J. N. Rose, P. C. Standley, & P. G. Russell 13043*, Sierra de Alamos, vicinity of Alamos, State of Sonora, Mexico, March 18, 1910 (U. S.); *A. E. Salazar 585*, growing 1.25–1.50 meters high, in open, sandy places, Rancho del Coacoyol, San Ignacio, State of Sinaloa, Mexico, September 13, 1918 (U. S.); *Mr. Salle*, Mt. Orizaba, Mexico (Del.); *J. G. Schaffner 204*, in sandy places, Mexico, September, 1876 (Gray); *J. G. Schaffner 397*, Orizaba, State of Vera Cruz, Mexico, August, 1855 (Par.); *B. Seemann*, near City of Panama, Panama (Par.); *J. A. Shafer 385*, roadside, Montserrat, West Indies, February 4, 1907 (N. Y.); *idem 1848*, spontaneous, vicinity of La Gloria, Camaguey, Cuba, February, 1909 (N. Y.; U. S.); *P. Sintenis 5773*, Porto Rico, December 31, 1886 (Gray; U. S.); *J. K. Small 7944*, pine lands west of Silver Palm, Florida, November 22, 1916 (N. Y.); *idem et J. B. DeWinkeler 9767*, pine lands near Crooked Lake, Polk County, Florida, December 12, 1920 (N. Y.); *idem et C. A. Mosier 10972*, swamps, Apalachicola, Florida, November 26, 1923 (N. Y.); *P. C. Standley 19235*, alt. 650–850 meters, weed in garden, vicinity of San Salvador, Salvador, December 20, 1921–January 4, 1922 (Gray; N. Y.; U. S.; nomina vulg. flor de muerto, botón de oro); *idem 30005*, in garden, Río Pedro Miguel, near East Paraíso, Canal Zone, Panama, January 7, 1924 (U. S.; nom. vulg. niño muerto); *J. B. Thompson* (direction of) 348, cult., Guam, Mari-

anne Isls. (U. S.); *R. A. Toro 487*, vicinity of Medellín, Colombia, August 28, 1927 (N. Y.); *L. B. Warren*, Georgetown, British Guiana, 1924 (U. S.).

The plants just listed for this species have the more or less hispid stem, branches, petioles and foliar midribs as shown in Cavanilles' type plate. This fact, together with the fact that they mostly came from Mexico, as did Cavanilles' material originally, shows that Cavanilles was describing the species having reddish-orange ligules (*C. aurantiacus* Klatt) and not the truly sulphureous-rayed *C. calvus*. His description of the ligules, "saturate sulphurea," clearly was inexact, as indeed a number of other color descriptions given by him (e.g., "coccinea" for the orange-yellow rays of *Bidens sambucifolia*, op. cit. 3: 15).

The species has been used widely in recent years for ornament and also has been known for centuries to the Aztecs of Mexico as a dye plant (cf. J. N. Rose, Gard. and Forest 8: 484. fig. 66. 1895; W. E. Safford, Journ. Wash. Acad. Sc. 8: 613. 1918).

Cosmos sulphureus var. **exaristatus**, nom. nov.; *C. sulphureus* f. *exaristatus* Brandeg. in herb.

A specie achaeniis etiam ovariis exaristatis differt.

Type specimen: Collected by *C. A. Purpus*, No. 6793, Sierra de Tonalá, State of Chiapas, Mexico, September, 1913 (Calif.).

Distribution: Known only from the states of Morelos, Oaxaca, and Chiapas, southern Mexico.

Specimens examined: *E. Bourgeau 1206*, ravine near Cuernavaca, State of Morelos, November 14, 1865 (Del., 2 sheets); *C. G. Pringle 9889 pro parte*, alt. 5,000 feet, Cuernavaca, November 12, 1902 (N. Y.); *C. A. Purpus 6793* (type, Calif.; cotypes, Field; Gray; N. Y.; U. S.); *C. L. Smith 291*, alt. 7,000–8,000 feet, Sierra de San Felipe, State of Oaxaca, October, 1894 (Mo.).

The exaristate-achened plants are here treated varietally to conform with the varietal status for the exaristate-achened plants of *C. bipinnatus* (var. *exaristatus* DC.).

6. **Cosmos caudatus** HBK. Nov. Gen. et Sp. 4: 188 (240). 1820; *Bidens Berteriana* Spreng. Syst. Veg. 3: 454. 1826; *Cosmea caudata* Spreng. loc. cit. 615; *C. cordatus* H. & K. ex Benth. Bot. Sulph. 186. 1844 (sphalm); *Bidens caudata* Schz. Bip. in Seem. Bot. Voy. Herald 308. 1852–57.

Herba annua, erecta, caule glabrato vel pilis multiloculatis hinc inde consperso, sulcato, obscure tetragono, 0.6–2 (–2.5) m. alto. Folia tenuiter petiolata, petiolis principalium pro unica planta nunc brevibus (1–2 cm.) nunc multo longioribus (etiam 5–7 cm.), petiolo adjecto 1–2 dm. longa, saepius tripinnatisecta, circumambitu del-

toidea, segmentis ultimis oblongo-lanceolatis, membranaceis, glabratissed margine spinuloso-ciliatis, apice acribus et saepe mucronatis, saepius 3–10 mm. latis. Capitula (pro plantae magnitudine parva) non numerosa, tenuiter pedunculata pedunculis saepius glabratiss 1–3 dm. longis, pansa ad anthesin plerumque tantum 2.5–3 cm. lata et circ. 8–12 mm. alta. Involucri bracteae exteriores circ. 8, lineari-subulatae, tergo glabrae sed margine ciliatae, saepe patentess, circ. 6–10 mm. longae, interioribus oblongo-linearibus vel etiam late oblongo-lanceolatis subaequales. Flores ligulati circ. 8, ligula oblongo-ob lanceolati, purpurei rosaceive, apice saepe obtuse trilobati lobo mediano longiore, nunc plus minusve parvi abortivique nunc 1–1.5 cm. longi. Achaenia saepius 20–30, infra fusiformia, curvata, plus minusve tetragona, unaquaque facierum profunde 1-sulcata, nigra vel hinc inde brunnea, glabrata vel minutissime spinuloso-scabrida, 1.2–1.5 mm. crassa; supra longe rostrato-attenuata, recta vel subcurvata, teretiuscula, brunnea vel straminea, sulcata, dense erecteque setosa; corpore (rostrato adjecto) 1.2–3 (vel etiam –3.5) cm. longa; apice biaristata vel saepius imperfecte triaristata aristis (principalibus tenuibus) retrorsum hamosiss, late divergentibus vel etiam reflexis, 3–5 mm. longiss.

Type specimen: Collected by Humboldt and Bonpland, near Havana, Cuba, March [1801] (Par.).

Distribution: Throughout the West Indies; in Florida, but rare; in Mexico from states of Tamaulipas and Sinaloa southward; widely distributed in Central America; extending southward in South America to Ecuador, Bolivia, Paraguay, and southernmost Brazil. In the eastern hemisphere occurring in French Indo-China, British East India, Philippine Islands, Molucca Islands, Island of Sumatra, Island of Mauritius, etc.

Specimens examined: *W. L. Abbott 244*, common along roadside, vicinity of Samaná, Samaná Peninsula, Santo Domingo, December, 1920 (U. S.); *idem 630*, Pimentel, Province of Pacificador, Santo Domingo, January 20–25, 1921 (U. S.); *idem 1503*, alt. up to 200 meters, roadside, vicinity of Samaná, Santo Domingo, January 8, 1922 (U. S.); *E. André K1255*, equatorial America (N. Y.); *anon.*, Surinam (Phila.); *H. H. Bartlett & C. D. LaRue 192*, Asahan, east coast of Sumatra, 1918 (Calif.); *J. Bermejoss 358*, Palawan, Philippine Isls., January, 1906 (N. Y.; U. S.); *Bertero*, Porto Rico (ex herb. Spreng., Par.; type of *Bidens Berteriana* Spreng.); *Blauner 36*, West Indies, 1853 (Del.); *Blodgett*, Key West, Florida (N. Y., 2 sheets); *E. G. Britton 2886*, between Grange Hill and Glasgow, Jamaica, March 1–13, 1908 (N. Y.); *eadem et D. W. Marble 1233*, shaded bank, St. Peter, St. Thomas, West Indies, February 11–22, 1913 (N. Y.; U. S.); *N. L. Britton & E. G. Britton 388*, vicinity of Matanzas, Cuba, March 16, 1903 (N. Y.); *idem et M. S. Brown 6642*, roadside, vicinity of Dorado, Porto Rico, March 20–22, 1922 (N. Y.); *N. L. Britton & J. F. Cowell 25*, cult. e sem. lectiss September 5, 1901, St. Croix, American Virgin Isls. (N. Y.); *idem 25*, the original (spontaneous) material itself (N. Y.); *idem 390*, roadside, vicinity of Utuado, Porto

Rico, March 15–20, 1906 (N. Y.); *N. L. Britton, F. S. Earle, & C. S. Gager 6885*, growing 2 meters high, roadside, San Diego de los Baños, Province of Pinar del Río, Cuba, August 31–September 3, 1910 (N. Y.; U. S.); *N. L. Britton & J. A. Shafer 776*, alt. 325 meters, on bank, Tortola, Virgin Isls., February 13–17, 1913 (N. Y.; U. S.); *W. E. Broadway*, open places, St. George, Grenada, West Indies, December, 1904 (N. Y.; U. S.); *idem 524*, on bank of St. Madeleine Road, vicinity of Cayenne, French Guiana, June 20, 1921 (Gray; N. Y.); *idem 7419*, Cedros, Trinidad, November 20, 1915 (N. Y.); *Burchell 9121*, tropical Brazil (Gray); *S. Calderón 90*, San Salvador, Salvador, January, 1922 (Gray; N. Y.; U. S.); *idem 1242*, Santo Domingo, Salvador, 1922 (Gray; U. S.); *idem 2403*, in garden, San Salvador, Salvador, 1928 (Field); *idem 2404*, cult., eodem loco et tempore (Field); *Mr. Caley*, St. Vincent, West Indies, 1817 (Del., 2 sheets); *N. Catalan*, Province of Laguna, Luzon, Philippine Isls., February–March, 1917 (Calif.); *J. R. Churchill*, Constant Spring, Jamaica, March 23, 1897 (Gray); *J. & M. S. Clemens 4413*, mission grounds, Tourane, Annam, French Indo-China, May–July, 1927 (Mo.); *R. Combs 623*, common in waste places, Cieneguita, District of Cienfuegos, Province of Santa Clara, Cuba, September 30, 1895 (Gray; N. Y.); *J. F. Cowell 91*, between Mt. Hope and Santa Rita Trail, Panama, February 25, 1905 (N. Y.); *J. S. De La Cruz 1009*, growing 8 feet high, Santa Rosa, Moruka River, Pomeroun District, British Guiana, August 16, 1921 (Gray; N. Y.; Phila.; U. S.); *idem 1217*, Kamwatta, Pomeroun District, September 21, 1921 (N. Y.); *idem 1862*, growing 3 feet high, vicinity of Bartica, on the Essequibo River, Lat. 6° 25' N., British Guiana (N. Y.; U. S.); *idem 2516*, Waramuri Mission, Moruka River, Pomeroun District, British Guiana, October 23–27, 1922 (Calif.; Gray; N. Y.; Phila.; U. S.); *idem 2932*, Pomeroun River, Pomeroun District, January 14–20, 1923 (Gray; N. Y.; U. S.); *idem 3668*, Waini River, Northwest District, British Guiana, April 3–18, 1923 (Calif.; Gray; N. Y.; Phila.; U. S.); *idem 3776*, eodem loco et tempore (Calif.; Gray; N. Y.; Phila.; U. S.); *idem 3959*, Wanama River, Northwest District, Lat. 7° 45' N., Long. 60° 15' W., May 10–23, 1923 (Gray; N. Y.; U. S.); *idem 4330*, Assakatta, Northwest District, Lat. 7° 45' N., Long. 59° 5' W., September 18–28, 1923 (Calif.; Gray; Mo.; N. Y.; Phila.; U. S.); *von Schack*, Trinidad, West Indies (N. Y.); *De Vore & Hoover 234*, Santa Cruz, District of Davao, Mindanao, Philippine Isls., April, 1903 (U. S.); *A. O'Donovan*, vicinity of Santiago de las Vegas, Province of Havana, Cuba, November 17, 1904 (N. Y.); *P. Dusen 9869*, in ruderal and bush-covered places, Porto Don Pedro II, State of Paraná, Brazil, May 31, 1910 (N. Y.; U. S.); *Père Duss 1443*, growing 1.3 meters tall, naturalized in environs of St. Pierre, Martinique, West Indies, 1879 (N. Y.); *idem* (similiter) *1443*, West Indies, 1884 (U. S.); *idem 2499*, growing 3–5 feet tall, road from Basse-Terre to Gourbevre at Gourbevre, Guadeloupe, West Indies, 1892 (U. S.); *idem* (similiter) *2499*, introduced and naturalized in nearly all parts of Guadeloupe, 1893 (N. Y.); distrib. *Eggers*, St. Kitts, West Indies, December, 1882 (U. S.); *Eggers*, St. Thomas, West

Indies, June 24 and December 12, 1876 (Gray); *idem* 2973, Aybonito, at La Lima, Porto Rico, December 5, 1885 (U. S.); *idem* 5942, at Great Courland River, Tobago, West Indies, November, 1889 (N. Y.); A. D. E. Elmer 7037, Palo, Province of Leyte, Leyte, Philippine Isls., January, 1906 (N. Y.); *idem* 14386, Irosin (Mt. Bulusan), Province of Sorsogon, Luzon, Philippine Isls., October, 1915 (U. S.); H. Fernando 100, Province of Santa Clara, Cuba, November 13, 1919 (N. Y.); W. C. Fishlock 309, pastures, Purcells, Tortola, Virgin Isls., January 1, 1919 (Gray; Phila.); A. Fredholm 3137, hillside near Port Antonio, Jamaica, July 7, 1897 (N. Y.; U. S.); Funck & Schlim 25, Guadeloupe, West Indies, December, 1845 (Del.); G. F. Gaumer 2505, Mérida, State of Yucatan, Mexico (Field); *idem* 2075, Chichankanab, State of Yucatan (Field; U. S.); Glaziou 12844, Caminho do Macaco, State of Rio de Janeiro, Brazil, April 14, 1881 (N. Y.; U. S.); *idem* 14007, State of Rio de Janeiro (Del., 3 sheets); H. A. Gleason 600, along railway tracks, dense upland forest, Rockstone, British Guiana, July 15–August 1, 1921 (N. Y.; U. S.); G. P. Goll 249, Candelaria, Porto Rico, November 11, 1899 (U. S.); *idem* 741, Jaguey (Coamo), Porto Rico, November 23, 1899 (U. S.); *idem* 927, dry soil by roadside, Mayagüez, Porto Rico, November 30, 1899 (U. S.); L. Hahn 333, between St. Pierre and the Fond St. Denis, Martinique, West Indies, December, 1867 (Del.); E. Hassler 8826, growing 1–2 meters tall in ruderal places in the hill region, Cordillera de Villa-Rica, Paraguay, January, 1905 (Hassl.); S. Hayes 266, Manzanillo Is., Panama, October 20, 1859 (N. Y.); A. A. Heller 6134, on Adjuntas Road, 7 miles from Ponce, Porto Rico, November 27, 1902 (Gray; N. Y.; Phila.; U. S.); *idem et uxor* 133, grassy field, near Río Pedras, Porto Rico, January 13, 1899 (N. Y.; U. S.); Herb. Wight 1452, British East India (N. Y.); E. T. Heyde 334, Guatemala, 1892 (U. S.); *idem et Lux* 3793, alt. 3,000 feet, Río de Las Cañas, Department of Santa Rosa, Guatemala, September, 1892 (Chi.; Gray; N. Y.; U. S.); A. S. Hitchcock 17549, Issorora, Aruka River, Lat. 8° 10' N., Long. 59° 50' W. (northern South America), January 16–17, 1920 (Gray; N. Y.; U. S.); I. F. Holton 269, La Paila, Colombia, April 25, 1853 (N. Y.; Phila.); Horne 96, near Caney, Santiago, Cuba, September 4, 1905 (U. S.); W. Jameson 60, Quilichao, Ecuador (U. S.); Johnson, Porto Rico (N. Y.); E. P. Killip 3134, dry plains, Chivi-Chivi, Panama, October 11, 1917 (U. S.); *idem et T. Hazen* 8375, field, 900–920 meters, Zarzal, Department of El Valle, Colombia, July 20, 1922 (N. Y.; U. S.); E. P. Killip and A. C. Smith 15443, growing 3–5 feet tall, alt. about 980 meters, vicinity of Piedecuesta, Department of Santander, Colombia, December 19–24, 1926 (Gray; N. Y.; U. S.); O. Kuntze 204, Caguay, Porto Rico, March 7, 1874 (N. Y.); *idem* 803, Trinidad, West Indies, April, 1874 (N. Y.); F. C. Lehmann 7491, alt. 1,000 meters, forests of Cerrito in State of Cauca, Colombia, July (N. Y.); E. C. Leonard 7435, alt. about 350 meters, field, north side of Mt. Laidie, vicinity of St. Michel de l'Atalaye, Department du Nord, Haiti, November 23, 1925 (N. Y.; U. S.); P. Levy 224, alt. 100 meters, uncultivated savannas, Ile d'Omotepe, Nicaragua, October, 1869 (Del.); A. Loher 3627, San Francisco, central Luzon, Philippine

Isls. (U. S.); *J. F. Macbride 2656*, savannas, Panama, February 22, 1923 (Field; U. S.); *L. Mangubat 509*, Is. Balabac, Philippine Isls., March–April, 1906 (N. Y.; U. S.); *R. C. McGregor 64*, Manila, Luzon, Philippine Isls., October–December, 1904 (U. S.); *E. D. Merrill 1346*, Antipolo, Province of Rizal, Luzon, February, 1903 (N. Y.; U. S.); *idem 3646*, Caloocan, Province of Rizal, Luzon, November, 1903 (N. Y.; U. S.); *G. S. Miller 14*, Montserrat, West Indies, February 10, 1924 (U. S.); *J. G. Ortega 5966*, Mazatlán, State of Sinaloa, Mexico, 1925 (U. S.); *E. Otto 303*, Cuba (Gray); *E. Palmer 333*, alt. about 350 meters, vicinity of Gómez Farias, State of Tamaulipas, Mexico, April 13–21, 1907 (Field; Calif.; Gray; N. Y.; U. S.); *Paulay*, vicinity of Pamplemousses, Mauritius, May, 1887 (Mus. V.); *F. W. Pennell 4156*, alt. 40–70 meters, Los Hurtados, on the Río Sinu, Department of Bolívar, Colombia, February 4, 1918 (N. Y.); *idem 6195*, alt. 1,090 meters, roadside, Palmira, Department of El Valle, State of Cauca, Colombia, May 26–30, 1922 (Gray; N. Y.; U. S.); *C. V. Piper 5531*, Empire to Mandinga, Canal Zone, Panama, February 23, 1923 (Gray; U. S.); *H. Pittier 2152*, alt. 50–150 meters, fields and waste places, around Culebra, Canal Zone, Panama, January 1, 1911 (U. S.); *idem 2246*, alt. 10–30 meters, between Gorgona and Mamei, Canal Zone, Panama, January, 1911 (Gray; U. S.); *idem 9644*, San Juan del Norte, Nicaragua, June, 1895 (U. S.); *idem 9905*, growing 1 meter tall, alt. 800–1,000 meters, El Tasón, near El Valle, Federal District, Venezuela, November 12, 1921 (Gray; N. Y.); *idem 16432*, coffee plantations, alt. 900 meters, Nuestro Amo, Turrúcares, Costa Rica, September 15, 1902 (Del., 2 sheets); *C. L. Pollard, E. Palmer, & W. Palmer 188*, vicinity of Baracoa, Province of Santiago, Cuba, February 1–7, 1902 (Gray; N. Y.; Phila.; U. S.); *C. A. Purpus 6685*, in the sand of the river, Finca Mexiquito, State of Chiapas, Mexico, July, 1913 (Calif.); *idem 8703*, Zacualpan, State of Vera Cruz, Mexico, October, 1921 (Calif.); *M. Ramos 1471*, Bosoboso, Rizal Province, Luzon, Philippine Isls., September, 1906 (N. Y.; U. S.); *idem et Edano*, Jolo, Sulu Province, Philippine Isls., September 10, 1924 (Calif.); *idem*, Alabat Is., Tayabas Province, Philippine Isls., October 18, 1926 (Calif.); *E. M. Reineck*, shady places in the harbor district, Porto Alegre, State of Rio Grande do Sul, Brazil, February 16, 1899 (U. V.); *A. E. Ricksecker 18*, Bassin, St. Croix, West Indies, October 23, 1895 (N. Y.); *C. B. Robinson 1837*, Amboina, Molucca Isls., July–November, 1903 (U. S.); *J. N. Rose, A. Pachano, & G. Rose 23367*, between Loja and Portovelo, Ecuador, October 3–6, 1918 (N. Y.; U. S.); *J. N. Rose & P. G. Russell 19658*, vicinity of Bahia, Brazil, May 27, 1915 (U. S.); *idem et W. R. Fitch 3338*, Halliday Hill, Antigua, West Indies, February 7, 1913 (N. Y.; U. S.); *idem 4373*, Sánchez, Santo Domingo, April 2, 1913 (N. Y.; U. S.); *J. T. Rothrock 353*, alt. 2,000–3,500 feet, Blue Mts., Jamaica, December 12, 1890 (Penn.); *J. N. Rovirosa 626*, Mexico, October 7, 1889 (N. Y.; Phila.; U. S.; cempoalillo incollarum); *Rugel 135*, in uncultivated valleys, Yumury, Cuba, 1849 (N. Y.); *H. H. Rusby & F. W. Pennell 527*, alt. 700–1,500 meters, Quebrada, Department of Huila, Colombia, July 31, 1917 (N. Y.); *H. H. Rusby & R. W. Squires 231*,

Catalina, lower Orinoco River, May, 1896 (Gray; N. Y.; Phila.; U. S.; U. V.); *J. A. Samuels 335*, road to Kwatta, Paramaribo, Dutch Guiana, June 7, 1916 (Gray; N. Y.); *L. Schlim 199*, alt. 3,500 feet, Ocaña, Province de Ocaña, Colombia, October, 1850 (Del., 2 sheets); *J. A. Shafer 123*, roadside near Grove and Richmond, Montserrat, West Indies, January 21, 1907 (N. Y.; U. S.); *idem 2353*, moist ground, Isabel Segunda to Campo Cielo, Vieques Is., Porto Rico, January 24, 1914 (N. Y.; U. S.); *idem 7692*, growing 3-4 feet tall, vicinity of Baracoa, Province of Oriente, Cuba, November 30, 1910 (N. Y.); *idem 11833*, San Juan de Zayas to San Gabriel, Province of Pinar del Río, Cuba, January 17-18, 1912 (Gray; N. Y.; U. S.); *idem 12079*, roadside, vicinity of Sanctus Spiritus, Province of Santa Clara, Cuba, February 15-24, 1912 (N. Y.); *P. Sintenis 112*, on hills about Mayagüez, Porto Rico, October 27, 1881 (N. Y.; U. S.); *idem 112b*, at margins of forests, Maricao, Porto Rico, November 16, 1884 (U. S.); *idem 5187*, on slopes at Buena Vista, Division of Humacao, Porto Rico, September 29, 1886 (U. S.; U. V.); *H. H. Smith 602*, alt. 100 feet, Santa Marta, Colombia, February, 1898-1901 (Gray; N. Y., 2 sheets; Phila.; U. S.); *idem* (similiter) *602*, rare in clearings below 3,000 feet, Bonda, Onaca, etc., vicinity of Santa Marta, July-August, 1898-99 (N. Y.); *idem et G. W. Smith 3*, alt. 800 feet, St. Vincent, West Indies, April-November (Gray); *P. C. Standley 19550*, alt. 650-850 meters, vicinity of San Salvador, Salvador, December 20, 1921-January 4, 1922 (Gray; U. S.); *idem 29029*, moist thicket, along old Las Cruces Trail, between Fort Clayton and Corozal, Panama, December 31, 1923 (U. S.; *clavellina incolarum*); *idem 30409*, growing 3-5 feet tall, on brushy slope, between France Field, Canal Zone and Catival, Province of Colón, Panama, January 9, 1924 (U. S.); *idem 31069*, growing 3-5 feet tall, in wooded swamp, vicinity of Fort Sherman, Canal Zone, Panama, January 15, 1924 (U. S.); *R. A. Toro 549*, Titiribi, vicinity of Medellín, Colombia, August 20, 1927 (N. Y.); *Trinidad Botanical Gardens* (herb. No.) *2579*, Trinidad, West Indies (U. S.); *O. E. White 2100*, alt. 400 feet, woodlands, Cachuela Esperanza, Bolivia, March 7, 1921 (U. S.); *idem* (similiter) *2100*, alt. 300 feet, weed along path in sun, Cachuela Esperanza, Bolivia, March 7, 1922 (N. Y.); *A. E. Wight 32*, on cultivated lowlands, Port Antonio, Jamaica, January 6, 1906 (N. Y.); *P. Wilson 9438*, dry hillside, Bahía Honda, Province of Pinar del Río, Cuba, December 18-19, 1910 (N. Y.); *C. Wright 318*, eastern Cuba, 1856-57 (Gray; Phila.); *H. Wydler 137*, Porto Rico, 1827 (N. Y.).

7. *Cosmos bipinnatus* Cav. Icon. et Descr. 1: 10. pl. 14. 1791; *Coreopsis formosa* Bonato Pisaura, Autom. Cor. Form. 22. 1793; *Cosmea bipinnata* Willd. Sp. Pl. 3: 2250. 1803; *Georgia bipinnata* Spreng. Syst. Veg. 3: 611. 1826; *Cosmos tenuifolius* Lindl. Bot. Reg. pl. 2007. 1837; *Cosmea tenuifolia* Lindl. ex Heynhold, Nom. 223. 1840; *Bidens formosa* Schz. Bip. in Seem. Bot. Voy. Herald 307. 1852-57; *B. Lindleyi* Schz. Bip. loc. cit.; *B. Lindleyi* Schz. Bip. ex Ind. Kew. 1: 301. 1895.

- Achaenia aristata* *Cosmos bipinnatus* sensu stricto.
Achaenia exaristata var. *exaristatus*.

Herba annua, erecta, ramosa, nunc glaberrima nunc minute scabrido-pubescent, 0.6–2 m. alta. Folia sessilia vel breviter (plerumque usque ad 7 mm.) alato-petiolata, plerumque 6–11 cm. longa, segmentis anguste linearibus vel subcapillaceis, 0.5–3 cm. longis et 0.4–1.2 mm. latis, apice acutis induratisque. Capitula moderate numerosa, pedunculata pedunculis tenuibus usque ad 2 dm. longis, pansa ad anthesin (3–) 4.5–8 cm. lata et 0.8–1.5 cm. alta. Involucri bracteae exteriores circ. 8, lanceolato-subulatae, 5–7-nervatae, superne saepe ciliatae, 9–13 mm. longae, interioribus ovato-lanceolatis subaequales. Flores ligulati plerumque 8, rosacei vel lilacini, ligula obovati, apice subtruncato plus minusve dentati, usque ad 3 cm. longi et usque ad 1.8 cm. lati. Paleae diaphanae superne caudato-elongatae cauda saepius aurea rarius atro-brunnea. *Achaenia* plus minusve linearia, nunc breviter clavataque nunc fusiformia ac supra tenuissime elongato-rostrata rostro angustissimo, atra, subacriter tetragona unaquaque facierum 1-sulcata, corpore vero glabra vel tuberculata circ. 6–10 mm. longa et circ. 1 mm. crassa, rostro plerumque erecto-hispida, omnino (aristis exclusis) 7–16 mm. longis, plerumque 2- raro 3-aristata aristis tenuibus retrorsum hamosis saepius 1–1.5 mm. longis.

Type specimen: No particular specimen cited. Cavanilles' original description was drawn from plants of Mexican origin which flowered at the Royal Garden of Madrid in October, November, and December, in the years 1789 and 1790.

Distribution: Arizona southeastward into the states of Puebla and Michoacán, Mexico; elsewhere (Maine, Florida, Cuba, Japan, etc.) adventive or cultivated.

Specimens examined:¹ *Andrieux 360*, Mexico, 1833 (Del.); *Brother Arsène 522*, alt. 2,170 meters, road to the Cimitière de la Piedad, vicinity of Puebla, State of Puebla, Mexico, September 29, 1906 (N. Y.; U. S.); *idem 522a*, Laguna de San Baltasar, vicinity of Puebla, State of Puebla, October 25, 1906 (U. S.); *idem 2429*, alt. 1,900 meters, ravine northwest of Punguato, vicinity of Morelia, State of Michoacán, Mexico, September 2, 1909 (U. S.); *idem 5425*, alt. 2,050 meters, Loma Santa María, vicinity of Morelia, State of Michoacán, September 17, 1910 (Gray; N. Y.; U. S.); *E. Bourgeau 845*, fields, Mexico, September 6, 1866 (Gray; U. S.); *S. Brown, N. L. Britton, & P. Bissett 1983*, in garden, Bermuda, West Indies, May 22–June 6, 1914 (N. Y.); *C. Y. Chiao*, cult., Nanking, Kiangsu Province, China, October 29, 1926 (Calif.); *T. Coulter 384*, Mexico (Gray; N. Y.; Phila.); *J. Gregg 65*, Mexico, 1848–49 (Gray); *L. Hahn*, Mexico, 1865–66 (U. V.); *K. Ichikawa 112* (distrib. *T. Tanaka*),

¹There is a possibility that two or three of the collections cited here have achenes of the exaristate type and should be referred therefore to the var. *exaristatus* DC. (q.v.). At the time of my first listing collections of this species I inclined toward ignoring this variety.

cult. Fukuoka Prefecture, Hikosan Township, Tagawa County, Japan, October 8, 1925 (Calif.); *idem* 951, cult., eodem loco et tempore (Calif.); *E. W. Nelson* 30, north slope of Volcán Toluca, State of Mexico, Mexico, September 9, 1893 (U. S.); *Brother Nicolás*, alt. 2,000 meters, on bank of Alseseca River, State of Puebla, Mexico, September 1, 1909 (Del.); *idem*, Rancho Posadas near Puebla, State of Puebla, September 25, 1909 (U. S.); *E. Palmer*, Arizona, 1869 (Phila.); *idem* 574, vicinity of Durango, Durango, Mexico, April–November, 1896 (Calif.; Field, 3 sheets; Gray; N. Y.; U. S.); *idem* 623, fields, fence rows, and gardens, Guadalajara, State of Jalisco, Mexico, September, 1886 (Gray; N. Y.; Phila.; U. S.; U. V.); *idem* 699, eodem loco, October, 1886 (Gray; U. S.); *J. C. Parlin*, wool waste, North Berwick, Maine, 1904 (Gray); *C. G. Pringle* 6590, alt. 7,500 feet, valley of Mexico, Federal District, Mexico, September 19, 1896 (Calif.; Field, 2 sheets; Gray; N. Y.; Phila.; U. S.; U. V.); *idem* 13036, alt. 7,300 feet, fields about Lechería, State of Mexico, Mexico, September 30, 1904 (Field; Gray; U. S.); *C. A. Purpus* 1552, alt. 8,000–9,000 feet, barley fields, Mt. Ixtaccihuatl, Mexico, October, 1905 (Calif.; Field); *E. M. Reineck*, on rubbish-covered places, Porto Alegre, State of Rio Grande do Sul, Brazil, February 9, 1898 (U. V.); *J. N. Rose* 2197, in the Sierra Madre, near Santa Teresa, Territory of Tepic, Mexico, August 11, 1897 (U. S.); *idem* 2762, near Plateado, State of Zacatecas, September 2, 1897 (Gray; U. S.); *idem* 3642, Plateado, State of Zacatecas, September 3, 1897 (U. S.); *idem et J. H. Painter* 7818, near Flor María, State of Mexico, Mexico, October 13, 1903 (U. S.); *J. G. Schaffner*, valley of Mexico, Federal District, Mexico, August, 1855 (Gray); *W. Schumann* 8, river bank and pond, Mexico, September 21, 1884 (Field; U. S.); *J. K. Small* 8637, pine lands, Redland District, Dade County, Florida, May 13, 1918 (N. Y.); *H. A. Van Hermann* 364, Santiago de las Vegas, Province of Havana, Cuba, December 15, 1904 (N. Y.).

This and its var. *exaristatus*, both handsome plants, are now cultivated widely for ornament. Early flowering dwarfed forms are seen in many gardens and the range of ray colors is from an intense wine-red through various shades of red and pink to a pure white. The last is the var. *albiflorus* Sprenger, Bull. R. Soc. Tosc. Ort. 15: 356. 1890. Recently semi-double heads have been produced and are common in cultivation.

Cosmos bipinnatus var. **exaristatus** DC. Prodr. 5: 606. 1836.

Achaenia apice calva.

Type specimen: Collected by Humboldt and Bonpland, at altitude of 6,000 feet, in meadows near Pátzcuaro (Pátzcuaro, Pécuario), State of Michoacán, Mexico, September, 1803.¹

Distribution: In southern Mexico from the states of Michoacán and Mexico southeastward into (fide citationis a DeCandolleo plantae

¹Type should be in the official set of Humboldt and Bonpland plants at Paris.

exsicc. Andrieuxii *numeri* 307) the State of Oaxaca. Elsewhere (California, South Carolina, etc.) doubtless always adventive or escaped from cultivation. Apparently commoner in cultivation than the species proper.

Specimens examined: *Virlet d'Aoust* 174, Mexico, 1851 (Par.); *Aschenborn* 393, Mexico (Par.); *Berlandier* 938, San Angel, Federal District, Mexico, September (Mo.); *ex herb. J. Davis* 5010, private garden, Anderson, South Carolina, October 1, 1920 (Mo.); *W. Schaffner* 156, fields at Santa Fe, Federal District, Mexico, September, 1854 (Par.); *ex herb. F. Wislizenus* 1187, Pomona, California, 1895 (Mo.).

Cosmos hybridus Hort. (ex *Gard. & Forest* 1: 474. 1888), raised in gardens at Newport, Rhode Island, was evidently a derivative of *C. bipinnatus* Cav. (plantis 6–8 pedibus altis; capitulis numerosissimis circ. 6–6.5 cm. latis parce suaveolentibus; radiis candidis vel pallido-roseis, marginalibus, crispis fimbriatisque). Information as to its parentage was said to be completely lacking, although a so-called *C. tenuissimus* (nom. nudum) was mentioned as a possible parent.

Cosmos spectabilis (Hort. ex Carr., *Rev. Hortic.* 64: 372. figs. 114–115 and plate. 1892) with its two vars. *alba* and *rosea*, was suspected by Carriere to have been of hybrid origin. It appears to be a mere horticultural name for a form of *C. bipinnatus* Cav.

8. *Cosmos parviflorus* (Jacq.) HBK. *Nov. Gen. et Sp.* 4: 189 (241). 1820; *Coreopsis parviflora* Jacq. *Hort. Schoenbr.* 3: 65 and pl. 374. 1798; *Cosmea parviflora* Willd. *Sp. Pl.* 3: 2250. 1804; *Cosmos parviflorus* Pers. *Syn.* 2: 477. 1807; *Cosmos bipinnatus* var. *parviflorus* Gray, *Pl. Wright.* 2: 90. 1853; *Bidens Humboldtii* Schz. *Bip. in Seem. Bot. Voy. Herald* 307. 1852–57.

Herba annua, erecta, gracilis, supra saepe ramosa, 3–9 dm. alta, caule nunc pubescenti nunc glabrato, sulcato. Folia parce petiolata petiolis alato-marginatis usque ad circ. 5 mm. longis, tota longitudine 3–7 cm. longa, bipinnata, segmentis angustissime linearibus tantum 0.1–0.6 mm. latis, faciebus glabris marginibus saepe valde spinuloso-ciliatis, apice acutis vel subobtusis costis omnibus vix notabiliter alatis. Capitula singillatim pedunculos interdum tenuissimos plerumque 1–3 dm. longos terminantia, pansa ad anthesin 1.5–2.5 cm. lata et 6–9 mm. alta. Involucri bractee exteriores plerumque 8, lanceolato-acuminatae vel lineari-elongatae, saepe patentes vel etiam reflexae, tergo viridi 3–5-atro-nervatae, maximam partem vel omnino glabrae, apice acuto induratae, 6–9 mm. longae; interiores oblongae, acutae, exterioribus paulo breviores, atrovirentes cum oris superne albidis. Flores ligulati circ. 8, albidii vel rosei, ligula plus minusve cuneato-obovati, apice 2–3-dentati, 5–9 mm. longi; tubulosi lutei. Achaenia subfusiformia, linearia, rotundato-tetragona, atra vel brunneo-atra, unaquaque facierum 1-sulcata, breviter erecto-

setulosa, superne subito angustata ac saepius rostrata, corpore (rostro adjecto) 9–16 mm. longa et 1–1.3 mm. crassa, apice 2–4-aristata aristis erectis, retrorsum hamosis, circ. 2 mm. longis.

Type specimen: Raised from seed of unknown origin, in the Garden of Schönbrunn, Vienna, Austria, and represented by Jacquin's type plate.

Distribution: Texas, Colorado, and Arizona, southward throughout Mexico (including Lower California) as far as the states of Puebla and Michoacán. Adventive on wool waste in Massachusetts and Maine.

Specimens examined: *Bro. Anect 30*, vicinity of Las Vegas, New Mexico, September, 1919 (Gray; N. Y.; U. S.); *idem 85*, eodem loco et tempore (U. S.); *idem 214*, eodem loco, October, 1919 (Gray; U. S.); *anon.*, cult., Paris, France, 1818 (Gray); *Bro. Arsène*, alt. 2,194 meters, Cerro Tijocate, vicinity of Morelia, State of Michoacán, Mexico, September 20, 1909 (U. S.); *idem 348*, alt. 2,194 meters, Rancho Posada, vicinity of Puebla, State of Puebla, Mexico, September 20, 1909 (U. S., 2 sheets); *idem 2560*, alt. 2,000 meters, eodem loco, September 15, 1909 (U. S.); *idem 5199*, alt. 1,950 meters, Loma Santa María, vicinity of Morelia, eodem tempore (N. Y.; U. S.); *idem 5461*, alt. 2,000 meters, Punguato, vicinity of Morelia, August 18, 1910 (Gray; U. S.); *idem 17315*, alt. 1,950 meters, southeast of Las Vegas, New Mexico, September 2, 1926 (Mo.); *Florence Beckwith 237*, Stonewall, Colorado, August, 1917 N. (Y.); *J. M. Bigelow*, Laguna Blanca, New Mexico, 1853–54 (U. S.); *J. C. Blumer 22*, Fort Bayard Watershed, Grant County, New Mexico, August 27, 1905 (Gray; U. S.); *idem 163*, eodem loco, September 3, 1905 (Gray; N. Y.; U. S.); *idem 1419*, alt. 8,000–8,250 feet, pine land recently lumbered, Barfoot Park, Chiricahua Mts., Arizona, September 24, 1906 (Gray); *idem 1624*, alt. 7,500 feet, Goldenrod Park, Chiricahua Mts., August 23, 1907 (Gray; N. Y.; U. S.); *idem 3321*, alt. 7,400 feet, Spud Ranch, Rincon Mts., Arizona, September 3, 1909 (Calif.; Gray); *T. S. Brandegee*, cult., 1895 (Calif.); *idem*, Sierra de la Laguna, Lower California, October 20, 1893 (Calif.); *I. W. Clokey 4369*, alt. 2,040 meters, dry hills, Rye, Colorado, September 3, 1921 (N. Y.; Phila.; U. S.); *T. D. A. Cockerell*, garden at Santa Fe, New Mexico, September, 1897 (N. Y.); *M. P. Dehesa 1556*, ravine, Concordia, State of Sinaloa, Mexico, September, 1919 (U. S.); *Miss L. L. Donnelly*, alt. 6,100 feet, Cananea, State of Sonora, Mexico, September 1, 1909 (Calif.); *W. W. Eggleston 10809*, alt. 2,480 meters, Barfoot Fire Station to Paradise, Cochise County, Chiricahua National Forest, Arizona, September 23, 1914 (Gray; U. S.); *idem 14233*, alt. 1,800 meters, above Silver Creek, Coronado Forest, Cochise County, September 29, 1917 (Gray); *idem 15999*, alt. 2,130 meters, Pinos Altos, Gila Forest, Grant County, New Mexico, September 18, 1919 (Phila.); *Charlotte C. Ellis 280*, alt. 8,200 feet, cultivated soil, Balsam Park, Sandia Mts., New Mexico, August 4–7, 1914 (U. S., 2 sheets); *C. Ehrenberg 434*, Mexico (Gray); *G. Engelmann*, Hot Springs Canyon, Las Vegas, New Mexico,

September 12, 1881 (Mo.); *A. Fendler* 447, woods west of Las Vegas, August 14, 1847 (Gray; Mo.); *idem* 448, bottom lands of Santa Fe Creek, New Mexico, October 20, 1846 (Mo.); *R. S. Ferris & C. D. Duncan* 2541, common, Livermore Peak, Davis Mts., Texas, July 9-12, 1921 (N. Y.); *E. L. Greene*, vicinity of Santa Rita del Cobre, New Mexico, 1880 (Phila.); *D. Griffiths* 7222, north slope of Santa Rita Mts., Arizona, September 13-21, 1901 (Mo.); *idem et J. J. Thornber* 109, Santa Rita Mts., September 20-October 4, 1902 (U. S.); *C. V. Hartman* 563, Guajochic, State of Chihuahua, Mexico, September 8, 1892 (Gray); *idem* 794, mountain near Pilaes, State of Chihuahua, September 18, 1891 (Calif., 2 sheets; Gray; N. Y.; Penn.; U. S.); *V. Havard* 5, 1-2 feet tall, south of Marfa, Texas, October, 1883 (Gray); *idem* 8, near creek, Limpia Mts., Texas, July, 1883 (Gray; U. S.); *A. A. & E. G. Heller* 3789, alt. 7,300 feet, between Santa Fe and Canoncito, New Mexico, June 29, 1897 (Gray; N. Y.; U. S.); *C. L. Herrick* 617, Hop Canyon, Magdalena Mts., New Mexico, August, 1895 (U. S.); *J. M. Holzinger*, Hanover Mt., southwestern New Mexico, July 31, 1911 (U. S.); *F. X. Holzner* 2011, Huachuca Mts., Arizona, August 23, 1893 (U. S.); *Hort. Cantabrigensis*, e sem. a *C. Wrightio* in New Mexico lectis cult. anno 1852 (N. Y.) et 1853 (Gray); *M. E. Jones*, alt. 5,500 feet, Huachuca Mts., Arizona, September 2, 1903 (U. S.); *idem* 4305, Bowie, Arizona, September 20, 1884 (U. S.); *J. G. Lemmon*, Rucker Valley, Chiricahua Mts., Arizona, September, 1881 (Calif., 2 sheets); *idem* 2765½, Tanner's Canyon at mill, Huachuca Mts., Arizona, August, 1882 (Calif.; Gray; U. S.); *F. E. Lowe*, from wool waste, North Worcester, Massachusetts, September 24, 1920 (Gray); *E. A. Mearns* 1963, Huachuca Mts., Arizona, August 21, 1893 (N. Y.); *idem* 2143, base of San Luis Mts. up to 6,000 feet, United States-Mexican boundary, September 5, 1893 (U. S.); *O. B. Metcalfe* 596, alt. about 7,500 feet, Mogollon Mts., Socorro County, New Mexico, August 25, 1903 (Gray; N. Y.; U. S.); *idem* 1303, alt. about 6,600 feet, wet gravelly soil, Kingston, New Mexico (Gray; N. Y.; U. S.); *A. I. Mulford* 1275, Whitman's Camp, New Mexico, September 8, 1895 (N. Y.); *G. C. Nealley* 219, Arizona, 1891 (N. Y.; U. S.); *E. W. Nelson* 4817, alt. 8,000 feet, on Sierra Madre, 40 miles from Guadalupe y Calvo, southwestern Chihuahua, Mexico, August 21, 1898 (Gray; U. S.); *idem* 6179, near Colonia García, in the Sierra Madre, State of Chihuahua, August 1-20, 1899 (Gray; U. S.); *Fr. Nicolás*, Rancho Posada, near Puebla, State of Puebla, Mexico, September 20, 1909 (U. S.); *E. Palmer*, Arizona, 1869 (U. S.); *idem* 109, Alvarez, State of San Luis Potosí, Mexico, September 5-10, 1902 (Calif.; Gray; N. Y.; U. S.); *idem* 579, rich, moist bottom lands, City of Durango and vicinity, State of Durango, Mexico, September, 1896 (Calif.; Gray; N. Y.; U. S., 2 sheets); *idem* 580, eodem loco et tempore (Calif.; Gray; U. S.); *idem* 588, alt. about 15 meters, vicinity of Tampico, State of Tamaulipas, Mexico, April 27-30, 1910 (U. S.); *idem* 699, Guadalajara, State of Jalisco, Mexico, October, 1886 (Gray); *idem* 1852, Tepic, Territory of Tepic, Mexico, January 5-February 6, 1892 (Gray); *J. C. Parlin* 1526, on wool waste heap,

North Berwick, Maine, September 10, 1902 (Gray, 2 sheets); *Parry & Palmer 482*, central Mexico, 1878 (Gray; Phila.; U. S.); *R. H. Peebles & G. J. Harrison 4736*, Patagonia Mts., Arizona, August 28, 1927 (U. S.); *H. A. Pilsbry*, alt. 8,000–11,000 feet, Black Range, around heads of Animas Canyon, Sierra County, New Mexico, September 10–18, 1915 (Phila.); *idem*, alt. 9,000–11,000 feet, between Sawyer's Peak and Hillsboro Peak, summit of Black Range, New Mexico, August 25–September 10, 1916 (Phila.); *F. G. Plummer*, alt. 7,300 feet, along creek, vicinity of Lincoln National Forest, New Mexico, 1903 (U. S.); *C. G. Pringle*, Arizona, June 24, 1882 (N. Y.); *idem 599*, near City of Chihuahua, State of Chihuahua, Mexico, September 29, 1885 (Gray); *idem 1298*, pine plains, base of the Sierra Madre, State of Chihuahua, September 29, 1887 (Gray; N. Y., 2 sheets; Phila.; U. S.; U. V.); *idem 1644*, base of the Sierra Madre, State of Chihuahua, October 7, 1888 (Calif.; N. Y.; U. V.); *idem 6572*, alt. 7,300 feet, lava beds, Pedregal, Federal District, Mexico, October 10, 1896 (Calif.; Gray; N. Y.; Phila.; U. S.; U. V., 2 sheets); *idem 11509*, alt. 7,000 feet, rocky hills near El Salto Station, State of Hidalgo, Mexico (Gray; U. S.); *C. A. Purpus 38*, Sunset Mts., Arizona, May–October, 1902 (U. S.); *idem 1552*, alt. 8,000–9,000 feet, barley fields, Ixtaccihuatl, Mexico (Gray); *idem 8119*, Flagstaff, Arizona, May–October, 1900 (Calif.; U. S.); *J. N. Rose & W. R. Fitch 17550*, vicinity of Raton, New Mexico, September 27, 1913 (U. S.); *J. N. Rose & J. H. Painter 7293*, Sierra de Guadalupe, State of Mexico, Mexico, September, 1903 (N. Y.; U. S.); *J. Rothrock 639*, Sonoita Valley, Arizona, August, 1874 (Gray, 2 sheets; U. S.); *H. H. Rusby 220*, hillsides, Mogollon Mts., New Mexico, August 31, 1881 (N. Y.; Penn.); *J. G. Schaffner 201*, sandy places about City of San Luis Potosí, State of San Luis Potosí, Mexico, August, 1876 (Gray); *idem 255*, near San Angel, Federal District, Mexico, September, 1855 (Gray); *Schiede*, Mexico (Gray); *Josephine Skehan 110*, Gray, New Mexico, August 31, 1898 (Calif.; Gray; N. Y., 2 sheets; U. S., 2 sheets); *F. H. Snow*, Hermit's Peak, New Mexico, August (U. S.); *P. C. Standley 5137*, alt. about 6,700 feet, near Pecos, New Mexico, August 20, 1908 (Gray; N. Y.; U. S.); *idem 13794*, alt. 2,200–2,900 meters, roadside, vicinity of Ute Park, New Mexico, August 25, 1916 (U. S.); *Mrs. O. St. John 105*, Vermejo Park, New Mexico, July, 1894 (Gray); *G. Thurber 1006*, State of Sonora, Mexico, September, 1851 (Gray, 2 sheets); *J. W. Toumey*, Prescott, Arizona, August 27, 1894 (Calif.); *Townsend & Barber 213*, alt. 7,500 feet, near Colonia García, Sierra Madre, State of Chihuahua, Mexico, August 1, 1899 (Calif.; Gray; N. Y.; U. S.; U. V.); *G. R. Vasey*, Kingman, Arizona, 1881 (U. S.); *T. E. Wilcox*, near Fort Huachuca, Arizona, 1891 (U. S.); *idem*, Fort Huachuca, September, 1892 (N. Y.) and September, 1893 (N. Y.); *idem 399*, near Fort Huachuca, September, 1894 (U. S.); *A. Wislizenus 200*, plains and mountains, State of Chihuahua, Mexico, October 5, 1846 (Mo.); *N. P. Woodward*, wool waste, North Worcester, Massachusetts, September 29, 1917 (Gray); *E. O. Wooton*, alt. 6,400 feet, Wingfields Ranch, along Ruidoso Creek, Lincoln County, New

Mexico, July 8, 1895 (Gray; N. Y.); *idem*, Tularosa Creek, Otero County, New Mexico, August 18, 1899 (N. Y.; U. S.); *idem*, Willow Creek, Socorro County, New Mexico, August 8, 1900 (U. S.); *idem* 243, alt. 6,300–7,000 feet, Lincoln County, New Mexico, July 30, 1897 (Calif.; Gray; N. Y.; U. S.; U. V.); *idem et P. C. Standley*, alt. about 5,600 feet, Dona Ana County, New Mexico, September 23, 1906 (U. S.); *idem* 3554, alt. about 7,400 feet, Lincoln County, New Mexico, August 25, 1907 (U. S.); *C. Wright* 1238, State of Sonora, Mexico, 1851 (Calif.; Gray; U. S.); *Mary S. Young*, abundant in moist canyons, Davis Mts., Texas, August, 1914 (Gray); *eadem* 66, Mt. Livermore, Davis Mts., August 18, 1914 (Mo.).

Sect. II. *Klibeia*.¹—Herbae verisimiliter omnes annuae. Flores ligulati rosacei vel flavi. Achaenia valde obcompressa, alata vel exalata, superne rostrata, aristata aristis sursum hispidulis. (Numeri 9 et 10.)

9. *Cosmos exiguus* Gray, Proc. Amer. Acad. 22: 429. 1887.

Herba annua, erecta, gracillima, glabra, caule saepius filiformi, simplici vel pauciramoso, 2–6 dm. alto. Folia indivisa, fere filiformia, lamina ipsa (costa mediana supra vix infra moderatim exorta) membranacea, margine integra ac saepe obscure revoluta, apice acuta, 1–4 (rariter –8) cm. longa et plerumque 0.5–1 mm. lata. Capitula solitaria pedunculos plerumque 1–5 tenuissimos 4–8 cm. longos terminantia, aegre radiata, pauciflora, pansa ad anthesin tantum circ. 4–7 mm. lata et 6–8 mm. alta. Involucri praecipue ad basim hispidi bractee exteriores circ. 4–6, lato-subulatae, adpressae, irregulariter 1–4 mm. longae; interiores oblongae, apicem angustatum versus ciliatae, 4–8 mm. longae. Flores ligulati 4–6, purpurei vel atro-rosacei, minuti, ligula irregulariter truncato-obovati, apice circ. 3-dentati, tubo (ipso circ. 2 mm. longo) incluso tantum circ. 4 mm. longi; ovario rudimentario demum stramineo et valde filiformi, supra sparsim erecto-setoso, circ. 5 mm. longo. Achaenia saepius 4–7, tenuissime linearia, obcompressa, unica facie (omnino 2 faciebus) circ. 4-sulcata, infra atra et glabrata, supra brunnea et perspicue erecto-setosa et attenuato-rostrata, corpore 1.2–1.9 cm. longa et 0.6–0.8 mm. lata, apice biaristata aristis tenuissimis, sursum hirtello-barbellatis, 1.5–3 mm. longis.

Type specimen: Collected by Edward Palmer, No. 559, among grass and rocks, Río Blanco near Guadalajara, State of Jalisco, Mexico, June–October, 1886 (Gray).

Distribution: In western Mexico from the State of Sinaloa south-eastward to the State of Michoacán.

Specimens examined: *C. R. Barnes & W. J. G. Land* 296, alt. 5,900 feet, dry hills, road to Santo Domingo Mine, Etzatlán, State of Jalisco, October 6, 1908 (Chi.); *T. S. Brandegee*, Cerro Colorado,

¹Sectio nov. Name anagrammatic, alluding to *C. Blakei*, which is included here.

Cofradía, vicinity of Culiacán, State of Sinaloa, November 3, 1904 (Calif.; Gray; U. S.); *E. Palmer* 559 (type, Gray; cotypes, N. Y.; Phila.; U. S.; U. V.); *C. G. Pringle* 2492, rocky hills near Guadalajara, State of Jalisco, October 14, 1889 (Calif.; Field; Gray; Phila.; U. S.; U. V.); *idem* 11508, alt. 5,000 feet, eodem loco, September 30, 1903 (Field; Gray; U. S.); *idem* 13037, alt. 6,000 feet, hills above Uruapan, State of Michoacán, October, 1904 (Field; Gray; U. S.); *J. N. Rose* 2943, Bolaños, State of Jalisco, September 10–19, 1897 (Gray; U. S.); *idem et J. H. Painter* 7475, near Guadalajara, State of Jalisco, September 30, 1903 (U. S.).

10. *Cosmos Blakei* Sherff, Bot. Gaz. 82: 334. pl. 22. 1926.

Herba erecta, verisimiliter annua, infra glabra, supra pubescens, caule obscure tetragono, internodiis longo, tantum moderate ramoso, + 5 dm. alto (radice non visa). Folia tenuiter petiolata petiolis 1.5 cm. longis, petiolo adjecto \pm 1 dm. longa, bipinnatisecta segmentis linearibus, acriter apiculatis, minute hispidis ac spinuloso-ciliatis, 0.5–1.5 mm. latis. Capitula ramos terminantia, robuste pedunculata pedunculis usque ad 1.2 dm. longis, pansa ad anthesin \pm 2.5 cm. lata et \pm 1 cm. alta. Involucrum pubescens, plus minusve campanulatum bracteis exterioribus spathulatis et supra saepe late rotundo-dilatatis, marginibus ciliatis apice aegre mucronatis, 4–6 mm. longis; interioribus multo majoribus, in sicco perspicue subflavis, late lanceolatis, ad apicem angustatum saepe minute glandulociliatis, circ. 1 cm. longis. Flores ligulati circ. 10–12, flavi, circ. 1.5 cm. longi; ovario lineari, membranaceo, sterili, in sicco nitido-albescenti, marginibus et supra ad costam medianam erecto-hispido, corpore circ. 1 cm. longo, apice erecto-hispido et aegre aristato 1–2 aristis tenuibus sursum hispidis \pm 0.5 mm. longis. Flores disci corolla tantum circ. 5 mm. longi, flavi. Achaenia valde obcompressa et infra circumambitu (alis latis inclusis) perspicue oblanceolata, faciebus atro-brunneis glaberrima vel supra et ad costam medianam erecto-setosa, marginibus straminea et setis spinulosis minute erecto-ciliata, supra cervicata cervice substraminea erecto-ciliata plerumque 3–7 mm. longa, tota longitudine (usque ad cervicis apicem) 1.4–2.4 cm., latitudine (alis inclusis) 2.7–3.4 mm.; apice erecto-hispida et biaristata aristis erectis vel parce divergentibus, tenuibus, sursum hispidis, 1.5–2.5 mm. longis.

Type specimen: Collected by Bernoulli and Cario, No. 1476, Retalhuleu, Guatemala, January, 1871 (Kew).

Distribution: Known only from type locality of Retalhuleu, Guatemala.

Specimens examined: *Bernoulli & Cario* 1476 (type, Kew; cotype, Petrop.).

Sect. III. *Mesinenia*.¹—Herbae perennes, erectae, basi lignescentes itaque plus minusve incrassatae. Flores ligulati flavi, rosei,

¹ Sectio nov. Name anagrammatic, alluding to the widely used name *C. Seemannii*, which is found reducible to *C. carrifolius*.

violacei, etc., numquam albi. *Achaenia* plerumque tetragona, numquam alata, cervicibus raro attenuato-elongatis, apice saepius aristata aristis retrorsum hamosis. (Numeri 11-15.)

11. *Cosmos Landii* Sherff, Bot. Gaz. 64: 29. 1917; *Bidens Palmeri* Gray, Proc. Amer. Acad. 22: 429. 1887.

Herba perennis, erecta, rigida, infra suffruticosa, prorsus glaberrima; caulibus gracilibus, striato-angulatis, 6-10 dm. altis. Folia petiolata petiolis alato-marginatis circ. 6-14 mm. longis, petiolo adjecto 3-7 cm. longa, circumambitu late triangulata, pinnatim 5-9-partita, segmentis linearibus, apice acutissimis vel mucronatis, margine revolutis et non manifeste ciliatis, medio unicostatis costa infra valde perspicua, basaliter ad rhachidem late alatum decurrentibus, 1-2 mm. latis, inferioribus quandoque irregulariter bi- vel trifidis. Capitula solitaria pedunculos tenues 3-13 dm. longos terminantia, pansa ad anthesin 2.5-3.5 cm. lata et 1-1.5 cm. alta. Involucri glabri bracteae exteriores 6-8, lineares vel parce lineari-lanceolatae, superne usque ad apicem acutum sensim angustatae, saepius patentibus, 3-5 mm. longae; interiores plus minusve oblongo-lanceolatae, apicaliter obtusae, 8-10 mm. longae. Flores ligulati circ. 5, aurei, ligula obovati, apice plerumque 3-dentati dentibus acutis, circ. 1.3-1.7 cm. longi et 7-9 mm. lati. *Achaenia* linearia, plus minusve tetragona angulis rotundatis, atra, unaquaque facierum 1-2-sulcata, nunc erostrata nunc moderatim rostrata, infra saepius sparsim breviterque et supra saepius dense perspicue erecto-setosa, corpore 1-1.4 cm. longa et 1-1.2 mm. crassa et paleas demum saepius vix superantia, apice 2-4-aristata aristis parce tenuibus, patentibus, retrorsum hamosis, usque ad 3 mm. longis.

Type specimen: Collected by Edward Palmer, No. 315, very common on hillsides, Río Blanco near Guadalajara, State of Jalisco, Mexico, August, 1886 (Gray).

Distribution: Known only from the State of Jalisco, Mexico.

Specimens examined: C. R. Barnes & W. J. G. Land 164, alt. 5,600 feet, Sierra de San Esteban, State of Jalisco, September 28, 1908 (Field); *idem* 167, eodem loco et tempore (Chi.; Field); *idem* 189, eodem loco (sed 5,700 pedibus) et tempore (Field); E. Palmer, Mexico, 1895 (U. S.); *idem* 315 (type, Gray; cotypes, Phila.; U. S.; U. V.); *idem* 3066, between Bolaños and Guadalajara, State of Jalisco, September 22, 1897 (U. S.); C. G. Pringle 2348, vicinity of Guadalajara, State of Jalisco, November 2, 1889 (Chi.; Del.; Field; Gray; Phila.; U. S.; U. V., 2 sheets); *idem* 11490, alt. 5,000 feet, banks of ravines, Río Blanco near Guadalajara, State of Jalisco, October 6, 1903 (Field; Gray; U. S.); J. N. Rose, cult. e sem. in Mexico lectis, 1898 (U. S.).

12. *Cosmos Langlassei* (Sherff), comb. nov.; *Bidens Langlassei* Sherff, Bot. Gaz. 64: 24. 1917.

Herba perennis, gracilis, 8-10 dm. alta, parce ramosa; caule glabra, acute et perspicuissime quadrangulata, basi tumida et lignea.

Folia petiolata petiolis 3–7 mm. longis plus minusve hispido-ciliatis, petiolo adjecto 2.5–5.5 cm. longa, pariter 2.5–5.5 cm. lata, bi- vel tripinnata (summa pinnata vel indivisa), supra glabra, margine hispidulo-ciliata, infra remotissime hispida, ultimis segmentis linearissimis, 0.5–1 mm. latis, integris, acute apiculatis. Capitula tenuiter pedunculata pedunculis usque ad 11 cm. longis, pansa ad anthesin 2.5–3 cm. lata et 0.8–1.1 cm. alta. Involucrum basi sparsim hispidum, bracteis exterioribus 12–16, linearissimis, fere glabris, apicaliter capillaribus acribusque, 6–7 mm. longis; interioribus linearibus, circ. 3 mm. longis. Flores ligulati circ. 7 vel 8, flavi, ligula anguste elliptici, 7–15-striata, ad apicem denticulati, circ. 1.5 cm. longi. Ovaria (achaeniis maturis non visis) 1–1.3 mm. longa, subplana, apice annulo 10–15 setulorum coronato.

Type specimen: Collected by E. Langlassé, No. 332, in clay soil at altitude of 1,200 meters, Le Faixin, southern Mexico, September 8, 1898 (Gray).

Distribution: Known only from type locality of Le Faixin in southern Mexico.

Specimens examined: *E. Langlassé 332* (type, Gray; cotypes, Kew; U. S.).

A little known species, collected by Langlassé during his exploration of the states of Guerrero and Michoacán. It was formerly placed provisionally by me in *Bidens* until mature achenes could be found. My thought was that they might prove to be rostrate, in which case the affinity with *Cosmos* could be confirmed. Subsequent studies have shown, however, that certain species or varieties of undisputed *Cosmos* material have erostrate achenes (e.g., *C. calvus*). Hence the general habit, which is more that of *Cosmos* than of *Bidens*, is here taken as the generic criterion, and a transfer of the species to *Cosmos* is considered imperative irrespectively of whether the achenes shall have been proved to be rostrate or not.

13. *Cosmos crithmifolius* HBK. Nov. Gen. et Sp. 4: 190 (242). 1820; *Cosmea crithmifolia* Spreng. Syst. Veg. 3: 615. 1826; *Bidens Sartorii* Schz. Bip. in Seemann, Bot. Voy. Herald 307. 1852–57; *B. valladolidensis* Schz. Bip. in Seemann, loc. cit. 308.

Herba perennis, erecta, maximam partem glaberrima, rigida, caule basim versus lignescente, alibi herbaceo, (saepe pallido-) viridi, perspicue 4- vel 6-angulato et plus minusve sulcato, interdum ramoso ramis erectis vel suberectis, 6–10 dm. alto. Folia petiolata petiolis alatis 1–2 (–2.8) cm. longis, petiolo adjecto 5–14 cm. longa, principalia plerumque pinnatim 3–7-partita, segmentis oppositis vel suboppositis anguste linearibus, integerrimis (vel terminali inferioribusque raro bifidis), crassiusculis, infra saepe rubescentibus et obsolete adpresso-hispidis, apice acerrimis, margine subrevolutis et saepe minutissime spinuloso-ciliatis, basi ad rhachidem alatum decurrentibus, 1–2 (rariter –2.5) mm. latis. Capitula pauca (saepius

tantum 1-7), tenuiter pedunculata pedunculis usque ad 1.3 dm. longis, pansa ad anthesin 3-5 cm. lata et 1-1.8 cm. alta. Involucri bracteae exteriores 7-12 (raro duabus seriebus imbricatae, primariae) lanceolato-subulatae, glabrae, apice induratae, circ. 4-6 (vel demum etiam -10) mm. longae, interiores late oblongae, apice pubescentes et saepe obtusae, 8-14 mm. longae. Flores ligulati 5 vel 6, rosei vel purpurascens, ligula late obovati, apice circ. 3-dentati, 1.5-2.5 cm. longi. Achaenia linearia, atro-brunnea, quadrangulata angulis rotundatis, unaquaque facierum plerumque 1-sulcata, apicem versus angustata sed non perspicue rostrata, infra sparsim supra valde erecto-setosa, corpore 1.1-1.6 cm. longa et 0.5-1 mm. crassa, apice 3-5-aristata aristis tenuibus usque ad 5.5 mm. longis, retrorsum hamosis.

Type specimen: Collected by Humboldt and Bonpland, at altitude of 6,000 feet, Valladolid [de Mechoacan] (i.e., Morelia), State of Michoacán, Mexico, September, 1803 (Par.).

Distribution: In southern Mexico northward to the Territory of Tepic, the State of Jalisco, and the region of Mt. Orizaba; also in Guatemala and Honduras.

Specimens examined: *Anon.*,¹ Barranca de Ybarra, near Guadalupe, State of Jalisco, September 6, 1892 (Chi.); *Andrieux 312*, Mexico, 1833 (Del., 2 sheets); *Fr. G. Arsène*, alt. 2,194 meters, Rancho Posada, vicinity of Puebla, State of Puebla, September 9, 1909 (U. S.); *idem*, alt. 2,300 meters, Cerro Azul, vicinity of Azul, near Morelia, State of Michoacán, November 4, 1909 (U. S.); *idem*, alt. 2,000 meters, Loma Santa María, Morelia, State of Michoacán, August 15, 1910 (Field); *idem*, alt. 1,950 meters, eodem loco, September 4, 1910 (U. S.); *idem 362*, alt. 2,194 meters, Rancho Posada, vicinity of Puebla, State of Puebla, September 25, 1909 (U. S.); *idem 2937*, alt. 1,950 meters, Loma Santa María, Morelia, State of Michoacán, August 15, 1909 (Mo.; U. S.); *idem 5863*, alt. 1,950 meters, eodem loco, October 28, 1910 (Mo.; N. Y.; U. S.); *idem 5938*, alt. 1,900 meters, eodem loco, 1910 (U. S.); *idem 6740*, alt. 2,200 meters, Cerro Azul, vicinity of Morelia, State of Michoacán, 1910 (U. S.); *C. Conzatti 712*, alt. 7,500 feet, Cerro San Felipe, State of Oaxaca, September 23, 1895 (Gray); *idem 1340*, alt. 2,600 meters, Santa Inés del Monte, Zimatlán, State of Oaxaca, December 8-9, 1905 (Gray); *idem 4162*, Cerro San Felipe, August 18, 1921 (U. S.); *T. Coulter 383*, Mexico (Gray); *H. Galeotti 2053*, alt. 5,000-8,000 feet, woods and prairies, Cordillera, State of Oaxaca, January-April, 1840 (Del.); *A. Ghiesbreght*, State of Oaxaca, October, 1842 (Del.); *idem 105*, Mexico (Gray; N. Y.); *idem 560*, flowering from July into November, in cold soil, mountain forests and particularly forests of *Pinus*, Chiapas, etc. (Gray; Mo.); *P. L. Jouy*, State of Jalisco, Mexico, 1892 (U. S.); *W. F. von Karwinski*, Mexico (Del.); *J. J. Linden*, forests of *Pinus*, State of Chiapas, February, 1840

¹Perhaps Edward Palmer, who collected here or near here in earlier years (cf. Proc. Amer. Acad. 22: 396. 1887).

(Del.); *F. Müller* 673, Orizaba, August, 1853 (N. Y.; Petrop.); *E. W. Nelson* 1376, alt. 7,500–9,500 feet, 18 miles southwest of city of Oaxaca, State of Oaxaca, September 10–20, 1894 (U. S.); *idem* 1436 and 1452, alt. 5,500–7,500 feet, valley of Oaxaca, State of Oaxaca, September 20, 1894 (U. S.); *Parry & Palmer* 485, central Mexico, 1878 (Mo.; Phila.; U. S.); *idem* 485½, eodem loco et tempore (Field; Gray; Mo., 2 sheets; N. Y.; U. S.); *C. G. Pringle* 4259, dry ledges, hills of Pátzcuaro, State of Michoacán, October 10, 1892 (Calif., 2 sheets; Chi.; Field; Gray; Mo.; N. Y.; Phila.; U. S.; U. V.); *idem* 5062, dry hills, eodem loco, November 24, 1891 (Gray); *idem* 9887, alt. 5,000 feet, gravelly banks near Guadalajara, State of Jalisco, August 12, 1902 (Field; Gray; Mo.; N. Y.; U. S.); *C. A. Purpus* 9093, Hacienda Monserrate, State of Chiapas, September, 1923 (Calif.; Field; Mo., 2 sheets; N. Y.; U. S.); *J. N. Rose* 2955, in the Sierra Madre, west of Bolaños, State of Jalisco, September 15–17, 1897 (Field; Gray; U. S.); *idem* 3396, in the Sierra Madre, near Santa Teresa, Territory of Tepic, August 10, 1897 (U. S.); *idem*, *J. H. Painter & J. S. Rose* 9256, Ajusco, Federal District, Mexico, August, 1905 (N. Y.; U. S.); *J. N. Rovirosa* 906, alt. 1,500 meters, Hacienda Santa Cruz, State of Chiapas, August 2, 1890 (Phila.); *A. E. Salazar* 475, common in moist, shady places, Quebrada de los Chiltes, San Ignacio, State of Sinaloa, August 14, 1918 (U. S.); *C. Sartorius*, Mirador, State of Vera Cruz (Par.; type of *Bidens Sartorii* Schz. Bip.); *W. C. Shannon* 608, alt. 7,000 feet, Amatenango, Department of Huehuetenango, Guatemala, December, 1891 (U. S.); *C. L. Smith* 292, alt. 7,000–8,000 feet, Sierra de San Felipe, State of Oaxaca, October, 1894 (Mo.; N. Y.; U. S.); *P. C. Standley* 56245, alt. 1,080–1,400 meters, forest of *Pinus*, vicinity of Siguatopeque, Department of Comayagua, Honduras, February 14–27, 1928 (Field).

14. *Cosmos linearifolius* (Schz. Bip.) Hemsl. Biol. Centr. Amer. Bot. 2: 200. 1881; *Bidens linearifolia* Schz. Bip. in Seemann, Bot. Voy. Herald 307. 1852–57.

Herba perennis, erecta, glabra, gracilis, caule striato, subtetragono, saepius simplici, circ. 6–9 dm. alto. Folia indivisa, linearia, crassiuscula, utrinque attenuata, apice acuta, plerumque 7–13 cm. longa, 2–5 mm. lata, marginibus minutissimo spinuloso-hispida, costa mediana gracillima et (etiam infra) non valde perspicua. Capitula pauca (plerumque 1–7), tenuiter pedunculata pedunculis usque ad 1.5 dm. longis, pansa ad anthesin 2.5–3.2 cm. lata et circ. 1.1–1.4 cm. alta. Involucri glabrati bractae exteriores 5–7, late lanceolata-subulatae, supra saepe spinuloso-ciliatae, circ. 3–5 mm. longae, interiores oblongo-lanceolatae, 4–8 mm. longae. Flores ligulati 6–9, ligula plus minusve oblongo-oblancheolati, rosacei vel aegre purpurei, apice circ. 3-dentati, usque ad circ. 1.5 cm. longi. Achaenia fusiformia, brunnea vel badia, rotundo-tetragona, unaquae facierum 1-sulcata, infra sparsim supra valde erecto-setosa, corpore 1.3–1.8 cm. longa et 1 mm. crassa, supra rostrata, apice 2–3-aristata aristis tenuibus, retrorsum hamosis, 2–3 mm. longis.

Type specimen: Collected by Berthold Seemann, No. 2022, in the Sierra Madre, northwest Mexico, November 25, 1849–February 22, 1850.¹

Distribution: State of Chihuahua southward into the State of Michoacán, western Mexico.

Specimens examined: *Fr. G. Arsène*, Santa María, Morelia, State of Michoacán, August 15, 1910 (Del., 2 sheets); *E. A. Goldman 208*, alt. 5,500–6,500 feet, near Batopilas, State of Chihuahua, October 3–5, 1898 (Gray; N. Y.); *M. E. Jones*, alt. 5,000 feet, Guayanopa Canyon, State of Chihuahua, September 23, 1903 (Gray; N. Y.); *J. G. Ortega 4447*, alt. 300–600 meters, La Bajada Tamazula, State of Durango, November, 1921 (Gray; U. S.); *E. Palmer*, southwestern Chihuahua, August–November, 1885 (U. S.); *J. N. Rose 2154*, in the Sierra Madre near Santa Teresa, Territory of Tepic, August 9, 1897 (U. S.); *idem 3455*, in the Sierra Madre, Territory of Tepic, August 13, 1897 (U. S.); *A. E. Salazar 86*, moist, open places, not abundant, San Ignacio, State of Sinaloa, November, 1917 (U. S.); *B. Seemann 2022* (type material, Kew; Gray); *Townsend & Barber 386*, near Chuichupa in the Sierra Madre, northwestern Mexico, August 30, 1899 (Calif.; Gray; N. Y.; U. S.; U. V.).

15. *Cosmos carvifolius* Benth. Bot. Voy. Sulphur 117. 1844; *Bidens Seemannii* Schz. Bip. in Seem. Bot. Voy. Herald 307. 1852–57; *B. carvifolia* Schz. Bip. in Seem. loc. cit. 308; *Cosmos Seemannii* Gray, Proc. Amer. Acad. 19: 16. 1883; etiam ex Greenm., loc. cit. 41: 265. 1905; *Bidens Seemannii* Schz. Bip. ex Sherff, Bot. Gaz. 64: 28. 1917 (sphalm).

Herba perennis, erecta, gracilis, caule subtetragono, striato, minutissime scabrido-hispido, conferte foliato, plerumque non nisi summam versus ramoso, 5–8 dm. alto. Folia breviter petiolata petiolis moderatim linearibus circ. 4–7 mm. longis, petiolo adjecto 3–6.5 cm. longa, inferne internodia superantia, 1–3-pinnatisecta, segmentis angustissime linearibus, apice acutissimis, supra costa mediana marginibusque minutissime et oculis non manifeste spinuloso-hispidis, tantum circ. 0.2–0.5 mm. latis. Capitula plerumque circ. 3–11, tenuiter pedunculata pedunculis usque ad 2 dm. longis, pansa ad anthesin 2.5–4 cm. lata et 0.8–1.5 cm. alta. Involucri glabri bractee exteriores circ. 8 vel 9, lineari-subulatae, 5–9 mm. longae, primo saepe adpressae, interiores late oblongo-lanceolatae, apicaliter obtusae, saepe purpurascens, 8–11 mm. longae. Flores ligulati 5 vel 6, purpurei vel rosacei, ligula oblongo-oblancheolata, apice acriter 3-dentati, circ. 1.4–2.2 cm. longi. Achaenia plus minusve lineari-fusiformia, obtuse tetragona, griseo-brunnea, glabra, unaquaque facierum

¹ Some difference of opinion exists as to which of Seemann's plants are best taken as types (cf. Hemsl., Biol. Centr. Amer. Bot. 4: 132. 1887). In any case, "the first set of the Panama and Mexican collections is at Kew" (Hemsl., loc. cit.) and this contains a well-preserved specimen of *Seemann 2014*. Schultz Bipontinus perhaps retained a duplicate, or author's type, and this may be looked for in his private herbarium (Par.).

1- vel 2-sulcata, apicem versus non longissime rostrata, corpore circ. 1.1-1.4 cm. longa et 1.5-1.8 mm. crassa, apice nunc 4-6- nunc 6-8-aristata aristis erectis, retrorsum hamosis, circ. 2-3 mm. longis.

Type specimen: Collected by George Barclay (Sulphur Expedition), Tepic, Territory of Tepic, Mexico, 1836-42 (Kew).

Distribution: In the Sierra Madre of northwestern Mexico and southeastward through the territory of Tepic into the State of Michoacán, Mexico.¹

Specimens examined: *Brother Arsène*, Cerro San Miguel, Morelia, State of Michoacán, February, 1909 (Del.; Field; Phila.); *G. Barclay* (Voyage of the Sulphur), Tepic, Territory of Tepic, 1836-42 (type, Kew); *Ghiesbreght 264*, cold ground, September-October (Gray, 2 sheets); *Ynes Mexia 601*, common at alt. 1,000 meters, on open hillside, road from Tepic to Jalcojotán, State of Nayarit, September 15, 1926 (U. S.); *E. Palmer 1852*, Tepic, Territory of Tepic, January 5-February 6, 1892 (Field; N. Y.; U. S.); *C. G. Pringle 8845*, alt. 5,000 feet, in fields, Uruapan, State of Michoacán, October 8, 1904 (Carn.; Del.; Gray; Mo.; Phila.; U. S.); *J. N. Rose 3435*, in the Sierra Madre, near Santa Teresa, Territory of Tepic, August 11, 1897 (Field; U. S.); *B. Seemann 2014* (Voyage of the Herald), Sierra Madre, Mexico (Gray; Kew; type collection of *Cosmos Seemannii*).

I have already dealt with this species (Bot. Gaz. 88: 303. 1929). The type is a plant with a somewhat irregular growth habit and with more than the usual number of branches. Its numerous heads, or, rather, the ones still remaining, are rather stunted in size. The achenes are 5-aristate. *Palmer 1852*, from the type locality, has many achenes likewise 5-aristate, but a few 6- and some 4-aristate. The other specimens examined have the achenes commonly 6-8-aristate, but otherwise differ in no important respects.

Sect. IV. *Discopoda* (DC.), comb. nov.; pro sect. *Bidentis* DC. Prodr. 5: 604. 1836.—Herbae perennes, e radicibus tuberiformibus elongatis fasciculatisque adscendentes vel erectae. Folia caulina vel basalia. Flores ligulati rarissime albido-rosacei, plerumque rosei, violacei, lilacini, purpurei vel valde atro-purpurei. Achaenia inferne attenuata et basi ipsa in areolam orbiculatam obliquamque dilatata, superne elongato-rostrata, aristis retrorsum hamosis. (Numeri 16-26.)

16. *Cosmos Pringlei* Robins. & Fern. Proc. Amer. Acad. 44: 623. 1909.

Herba perennis e radicibus tuberiformibus crassiusculis erecta, 6-9 dm. alta; caule subtereti, simplici vel ramoso, griseo-puberulo vel -pulverulo, praecipue in media parte folioso. Folia petiolata petiolis alatis 0.5-1.5 (-2.3) cm. longis, petiolo adjecto 3-9 (-13) cm. longa,

¹A specimen by Ghiesbreght, without locality, may have come even from the State of Chiapas (where Ghiesbreght collected very largely).

firminuscula, ab indivisis lamina ovato-oblonga vel cuneato-rhomboida supra medium dentata ad formas profunde partitas vel 1-2-pinnatifidas cum segmentis linearibus, integris, ciliatis, faciebus glabratis, supra pallido-viridibus, infra plerumque rubescentibus, apice obtusis acutisve variantia. Capitula pauca (1-5), pedunculata pedunculis tenuibus usque ad 3 dm. longis, pansa ad anthesin 6-8 cm. lata et 1.2-1.7 cm. alta. Involucri glabri bracteae exteriores plerumque 6 vel 7 rarius 8, oblongo-lanceolatae vel interdum lanceolato-subulatae, 5-8-nervatae, apice induratae, 7-11 mm. longae et 2-4 mm. latae, interioribus lanceolatis vel ovato-lanceolatis saepe aequales. Flores ligulati plerumque 8, pallide rosacei nec atropurpurei, ligula obovati, apice rotundato minutissime obsoletissimeque denticulati, 2-3.5 cm. longi et 1-1.9 cm. lati. Paleae (praesertim exteriores) lanceolatae ac valde diaphanae, flavido-striatae. Flores disci superne aurei. Achaenia tenuiter fusiformia, rotundato-tetragona, unaquaque facierum 1-sulcata, glabra vel breviter adpresso-hispida, subtus atra ac crassiora, supra elongato-rostrata ac saepe straminea, corpore (rostro incluso) 1.3-2.4 cm. longa, apice aristas binas arcuato-adscendentes retrorsum barbatas 2.5-5 mm. longas gerentia.

Type specimen: Collected by C. G. Pringle, *No. 1299*, on pine plains at base of the Sierra Madre, State of Chihuahua, Mexico, September 20, 1887 (Gray, 2 sheets).

Distribution: Along the Sierra Madre of northwestern Mexico, from northwestern Chihuahua southward into the Territory of Tepic.

Specimens examined: *E. W. Nelson 4853*, alt. 7,000-7,500 feet, base of Mt. Mohinora, 8 miles from Guadalupe y Calvo, State of Chihuahua, August 23-31, 1898 (Gray; U. S.); *idem 6097*, near Colonia García in the Sierra Madre, State of Chihuahua, August 25, 1899 (Gray; U. S.); *C. G. Pringle 1299* (type, Gray, 2 sheets; cotypes, N. Y., 2 sheets; Phila.; U. S., 2 sheets; U. V.); *J. N. Rose 2120*, between Santa Gertrudis and Santa Teresa in the Sierra Madre, Territory of Tepic, August 8, 1897 (U. S.); *C. H. T. Townsend & C. M. Barber 168*, alt. 7,500 feet, vicinity of Colonia García in the Sierra Madre, State of Chihuahua, July 26, 1899 (Del.; Field; Mo.; N. Y.; U. S.); *idem 438*, vicinity of Casas Grandes, State of Chihuahua, August 15, 1899 (Calif.; Del.; Field; Gray; Mo.; N. Y.; U. S.; U. V.); *idem 439*, alt. 6,000 feet, near Colonia García in the Sierra Madre, State of Chihuahua, August 22, 1899 (Mo., 2 sheets; N. Y.; U. S., 2 sheets).

17. **Cosmos Palmeri** Robins. Proc. Amer. Acad. 44: 623. 1909. Folia pinnata vel bipinnatifida lobis linearibus.

C. Palmeri sensu stricto.

Folia plerumque indivisa raro subtripartita, marginibus (saepe irregulariter) dentata.....var. *odontophyllus*.

Herba perennis e radicibus 2-5 tuberiformibus graciliter fusiformibus elongatis 5-8 mm. crassis erecta, 3-6 dm. alta, caule tereti

puberulo vel subglabrato, vix ramoso. Folia parce petiolata petiolis alatis usque ad 8 mm. longis, petiolo adjecto 3–5 (–6) cm. longa, pinnata vel bipinnatifida, lobis linearibus 1-nerviis acutiusculis vel obtusis margine nervoque saepius breviter hispidulis, crassiusculis, faciebus (praecipue inferioribus) saepe brunneo-rubrescentibus, 0.4–2.5 cm. longis et 1–3 (–5) mm. latis. Capitula solitaria longe tenuiterque pedunculata pedunculis 1.5–3.5 dm. longis, pansa ad anthesin 3.5–8 cm. lata et 1.3–1.8 cm. alta. Involucri glabri bracteae exteriores circ. 8, nunc subdeltoideo-ovatae nunc oblongo-lanceolatae, adscendentes vel saepe reflexae, virides, 6–10-atro-striatae, apice obtusiusculae ac paulo incrassatae, 4.5–8 mm. longae et 1.5–3 mm. latae; interiores ovato-oblongae, apice acutiusculae, usque ad 1.5 cm. longae et 5 mm. latae. Flores ligulati circ. 8, lilacini, ligula elliptici vel anguste obovati, apice circ. 3-dentati, 1.5–3.5 cm. longi et 6–17 mm. lati; tubulosi flavi. Achaenia linearia, tenuiter fusiformia, rotundato-tetragona, grisea brunneave, unaquaque facierum 1-sulcata, glabra vel supra costis aegre erecto-setulosa, apice biaristata aristis rectis 2–3 mm. longis retrorsum hamosis hamis raro solitariis saepissime 5–12.

Type specimen: Collected by Edward Palmer, No. 388, in "moist spots on hills and plains" at Otinapa, State of Durango, Mexico, July 25–August 5, 1906 (Gray).

Distribution: States of Durango and San Luis Potosí, and perhaps elsewhere, in northern to central Mexico.

Specimens examined: *P. I. Garcia 314*, State of Durango (U. S.); *E. W. Nelson 4563*, near El Salto, State of Durango, July 12, 1898 (U. S.); *E. Palmer 388* (type, Gray; cotypes, Mo.; N. Y.; U. S.); *idem et C. C. Parry 483 pro parte*, central Mexico, 1878 (Mo.); *J. N. Rose 2355*, State of Durango, August 16, 1897 (U. S.); *J. G. Schaffner 200 pro parte*, shady places near San Miguelito, State of San Luis Potosí, September, 1876 (Gray); *idem* (similiter) 200, State of San Luis Potosí, 1878 (N. Y.); *idem 641*, eodem loco, October, 1879 (U. S.).

Cosmos Palmeri var. *odontophyllus*, var. nov.—A specie foliis plerumque indivisis lamina rhomboideo-ovatis apicem versus irregulariter dentatis basim versus late cuneatis integrisve differt.

Type specimen: Collected by J. G. Schaffner, No. 200 *pro parte*, in shady places near San Miguelito, State of San Luis Potosí, Mexico, September, 1876 (Gray, cum specie ipsa commixta).

Distribution: Known only from the State of San Luis Potosí, Mexico.

Specimens examined: *C. C. Parry & Edward Palmer 483 pro parte*, central Mexico, 1878 (U. S.); *J. G. Schaffner 200 pro parte* (type, Gray); *idem* (similiter) 200, State of San Luis Potosí, 1878 (N. Y.); *idem* (similiter) 200 (641), in mountains at San Miguelito, State of San Luis Potosí, October, 1879 (N. Y.; U. S., cum specie ipsa commixta).

18. *Cosmos montanus*, sp. nov.

Folia indivisa vel usque ad tripartita. . . . *C. montanus* sensu stricto.

Folia pinnata foliolis plerumque 2-jugis. var. *pinnatus*.

Herba perennis, e radicibus tuberosis fasciculatisque erecta, gracilis, simplex vel moderate ramosa caule subangulato striatoque, glabra, \pm 6-7 dm. alta. Folia nunc pedatim tripartita, petiolata petiolis alatis 1-2 cm. longis, petiolo adjecto 4-7 cm. longa, nunc unico latere lobo laterali instructa, nunc indivisa; laminis vel segmentis linearibus vel oblanceolatis vel cuneato-oblanceolatis, membranaceis, minutissime revolutis spinuloso-ciliatisque, integris vel interdum paucidentatis, apice subacutis, faciebus viridibus vel infra rubescentibus, unico segmento plerumque 3-6 mm. lato, folii integri tota lamina etiam 1.5 cm. lata. Capitula pauca, tenuiter pedunculata pedunculis 1-2 dm. longis, pansa ad anthesin 3-4 cm. lata et 1.2-1.4 cm. alta. Involucri glabri bractee exteriores 7-9, lineares, crassiusculae, 3-5-nervatae, apice subobtusae, 7-10 mm. longae, quam interiores lanceolatae plerumque parce breviores. Flores ligulati 6-8, atro-purpurei, ligula obovati, apice integri vel obscure lobulati, 1.4-1.8 cm. longi et 8-11 mm. lati; tubulosi omnino flavi. Achaenia fusiformia, linearia, atra, rotundo-tetragona, unaquaque facierum 1-sulcata, glabra vel apicem versus minute erecto-setosa, erostrata vel subrostrata, corpore 8-10 mm. longa et 1-1.3 mm. lata, apice biaristata aristis retrorsum hamosis circ. 2 mm. longis.

Type specimen: Collected by J. N. Rose, No. 3469, in the Sierra Madre, State of Durango, Mexico, August 13, 1897 (U. S.).

Distribution: In the mountains of the Sierra Madre, State of Durango, southward to State of Zacatecas and Territory of Tepic, Mexico.

Specimens examined: *J. N. Rose*, near San Juan Capistrano, State of Zacatecas, August 18, 1897 (U. S.); *idem* 3433, in the Sierra Madre, near Santa Teresa, Territory of Tepic, August, 1897 (Field); *idem* 3469 (type, U. S.; cotype, Field).

Has been confused in herbaria with *Cosmos scabiosoides* HBK., from which it can readily be distinguished by its different foliar habit, its entirely yellow disk florets, etc.

Cosmos montanus var. *pinnatus*, var. nov.—A specie foliis pinnatis foliolis plerumque 2-jugis differt.

Type specimen: Collected by J. N. Rose, near Santa Teresa, in the Sierra Madre, Territory of Tepic, Mexico, August 12, 1897 (U. S.).

Distribution: Known only from type locality in Territory of Tepic, Mexico.

Specimens examined: *J. N. Rose*, near Santa Teresa, etc. (type, U. S.).

The type plant is nearly 5 dm. high, and has three slender peduncles 7.5-11 cm. long, one fully expanded flowering head 5.5 cm. wide, the

apparently 8 rays widely obovate, broadly but obscurely 3-lobed at apex, the yellow disk flowers not purplish at the top. The leaf segments are entire, mainly 2–3.5 mm. wide and 1.5–3.5 cm. long, at the apex indurated and subacute; their midrib stramineous, on lower surface emergent and conspicuous.

19. *Cosmos concolor*, sp. nov.

Herba gracilis, perennis, e radicibus paucis tuberiformibus elongatis fasciculatis erecta, caule simplici, tereti, hispidulo, circ. 5 dm. alto. Folia non numerosa (circ. 4- vel 5-jugis), vix petiolata petiolis alatis circ. 3–7 mm. longis, petiolo adjecto 3–5 cm. lata, pinnata vel bipinnatisecta, segmentis primariis linearibus, uninervatis, glabris vel costa mediana ac marginibus subrevolutis incrassatisque interdum obscure spinuloso-hispidulis, 1.5–2.5 (–3) cm. longis et 1.5–3.5 (–4.2) mm. latis, lateralibus saepius 2-jugis, inferioribus interdum rursus lobatis. Capitula solitaria tenuiter pedunculata pedunculis \pm 2 dm. longis, pansa ad anthesin circ. 3.5–4 cm. lata et 1.2–1.4 cm. alta. Involucri glabri bracteae exteriores \pm 7, oblongo-lanceolatae, apice purpurascences induratae subacutaeque, tergo 7–10-nervatae, circ. 6–7 mm. longae; interiores oblongae, purpurascences, circ. 8–9 mm. longae. Flores ligulati circ. 8, anguste obovati, atropurpurei, apice saepe acriter bidenticulati, 1.5–2 cm. longi; tubulosi similiter atropurpurei vel inferne interdum ecolorati. Achaenia immatura lineari-fusiformia, rotundato-tetragona, unaquaque facierum 1-sulcata, maximam partem glabra, cervice sparsissime setulosa, corpore circ. 9 mm. longa apice biaristata aristis subrectis retrorsum hamosis circ. 2 mm. longis.

Type specimen: Collected by J. N. Rose, No. 2353, State of Durango, Mexico, August 16, 1897 (Gray).

Distribution: Known only from states of Durango and Zacatecas, Mexico.

Specimens examined: *J. N. Rose*, in the Sierra Madre, State of Zacatecas, August 17, 1897 (U. S.); *idem* 2353 (type, Gray; cotype, U. S.).

20. *Cosmos scabiosoides* HBK. Nov. Gen. et Sp. 4: 190 (242). 1820; *Cosmea scabiosae* Spreng. Syst. 3: 615. 1826; *C. scabiosoides* HBK. ex Heynhold, Nom. 223. 1840; *Bidens scabiosoides* Schz. Bip. in Seem. Bot. Voy. Herald 308. 1852–57; *Cosmos scabiosoides* var. *typicus*, infra.

Foliorum pinnatorum vel raro subpinnatorum segmenta ultima plerumque lanceolato- vel ovato-oblonga, saepius integra.

var. *oblonga*.

Foliorum lamina vel segmenta diversa.

C. scabiosoides sensu stricto (i.e., var. *typicus*) et f. *indivisus*.

Herba perennis, erecta, e radicibus tuberosis fasciculatisque, 7–13 dm. alta, caule subtetragono, ramoso, raro glabrato saepissime

pubescenti. Folia saepius petiolata pinnatipartitaque, petiolo plano plus minusve alato-marginato usque ad 1.5 cm. longo adjecto 4–10 cm. longa, firmiuscula, foliolis vel laciniis 3–5, sessilibus, circumambitu diversissimis (nunc sublinearibus, nunc lanceolatis, nunc rhomboideis, etc.), infra medium cuneato-angustatis et in rhachidem decurrentibus, supra medium saepius serratis, ad apicem acutis ac saepius acuminatis, supra viridibus glabratisque, subtus interdum subrubescentibus et praecipue ad nervos hispidis, margine ciliatis; saepe nonnullis laminis indivisis, nunc lanceolatis nunc lanceolato-ovatis nunc etiam cuneato-obovatis, integriusculis vel irregulariter serratis. Capitula usque ad circ. 15, pedunculata pedunculis tenuibus usque ad 2 (raro –3) dm. longis, pansa ad anthesin 2.5–3.5 cm. lata et 1–1.4 cm. alta. Involucri glabri bracteae exteriores circ. 8, primo adpressae, demum patentes, lineari-lanceolatae, virides, circ. 5–7-striatae striis saepius purpureis, apice parce acuto nitidae indurataeque, 3–5 mm. longae, quam interiores purpurascens dimidio breviores. Flores ligulati circ. 8, atro-purpurei, ligula obovati, apice rotundato saepius 3-dentati dentibus obtusis, 1–1.5 cm. longi. Paleae lineares vel lanceolatae, atro-striatae, aliter flavidae. Flores disci crebri, flavi, glabri; dentibus ovatis, obtusis, purpureis. Achaenia tenuiter fusiformia, rotundato-tetragona, unaquaque facierum 1-sulcata, glabra, infra crassiuscula et atra, supra elongato-rostrata ac brunnescentia, corpore 1.2–2 cm. longa et 0.8–1 mm. lata, apice biaristata aristis tenuibus retrorsum hamosis, 2.5–3.5 mm. longis, demum patentibus reflexisve et interdum deciduis.

Type specimen: Collected by Humboldt and Bonpland, at altitude of 6,780 feet, on the western slope of the Mechoacan (Michoacán) Mountains, near Pázcuar (Pátzcuar, Pézcuar), State of Michoacán, Mexico, September, 1803.¹

Distribution: In Mexico, from the states of Michoacán and Mexico eastward to Mt. Orizaba and southeastward through the states of Morelos and Puebla even into Chiapas.

Specimens examined: *Brother G. Arsène*, Cerro Azul near Morelia, State of Michoacán, April, 1909 (Field); *idem* 5517, alt. 2,200 meters, eodem loco, September 1, 1910 (Field, 2 sheets; Mo.; U. S.); *idem* 5603 *pro parte*, alt. 2,500 meters, Dos Teteras (vicinity of Morelia), State of Michoacán, October 26, 1911 (Mo., cum var. *oblonga* commixta); *idem* 10128, alt. 2,330 meters, Cerro Tepoxuchitl, vicinity of Puebla, State of Puebla, July 11, 1907 (U. S.); *E. Bourgeau* 549, Santa Fe, Federal District, July 26, 1866 (Gray; N. Y.; U. S.); *idem* 2930, Escamella, vicinity of Mt. Orizaba, September 1–2, 1866 (Del., 2 sheets; N. Y.; U. V.); *T. Coulter* 390, Mexico (Gray; N. Y.); *C. A. Ehrenberg* 366, Mexico (Gray); *Mr. & Mrs. J. G. Lemmon* 90, valley of Mexico, Federal District, 1905 (Calif., 2 sheets); *F. M. Liebmman* 617, Chinantla, State of Puebla (Gray; Par., 2 sheets; U. S.); *F. Müller* 1177, Mexico (Par.); *idem* 1899, Mexico, August,

¹Type is doubtless still preserved in the official Humboldt and Bonpland set at Paris.

1853 (N. Y.); *Brother Nicolás*, Guadalupe, State of Puebla, 1910 (Field); *idem* 5438, alt. 2,330 meters, Cerro Tepoxuchitl, vicinity of Puebla, State of Puebla, August 20, 1910 (Mo.; U. S.); *C. R. Orcutt* 4378, The Park, Morelos, State of Morelos, September 3, 1910 (Mo.); *C. C. Parry & E. Palmer* 483, Mexico, 1878 (Gray); *C. G. Pringle* 3589 *pro parte*, wooded hills, Pátzcuaro, State of Michoacán, October 23, 1890 (Gray); *idem* 4263 *pro parte*, hills of Pátzcuaro, October 11, 1892 (Calif., 2 sheets; Chi.; Field; Gray; N. Y.; Phila.; U. S.); *idem* 9888, alt. 8,500 feet, hills near Ozumba, State of Mexico, November 4, 1902 (Field; Gray; N. Y.; U. S.); *C. A. Purpus* 1551, alt. 7,000–8,000 feet, hillsides and open woods, Salto de Agua, State of Chiapas, November, 1905 (Calif.; Field; Gray; N. Y.; U. S.; U. V., 2 sheets); *J. N. Rose & J. H. Painter* 6514, near Santa Fe, Federal District, August 22, 1903 (U. S.); *idem* 7994, eodem loco, October 18, 1903 (U. S.); *J. G. Schaffner* 3, near Mecameca, Mt. Popocatepetl, August 18, 1855 (Par.); *idem* 39, alt. 8,000 feet, near Guapimalpán, September, 1855 (Gray; Par.).

Coreopsis crassifolia Sesse & Moc. (Fl. Mex. edit. 2: 194. 1894. *Nec alior.*), a species from the mountains of Temascaltepec in the State of Mexico, Mexico, may belong here.

Cosmos scabiosoides var. *typicus*¹ f. *indivisus* Robinson, Proc. Amer. Acad. 44: 624. 1909.

Folia indivisa integriuscula vel irregulariter serrata lanceolata vel lanceolato-ovata vel etiam cuneato-obovata.

Type specimen: Collected by C. G. Pringle, No. 4263 *pro parte*, hills of Pátzcuaro, State of Michoacán, October 11, 1892 (Gray).

Distribution: The states of Michoacán and Jalisco, northward into the State of Zacatecas and the Territory of Tepic, Mexico.

Specimens examined: *Brother G. Arsène*, alt. 2,300 meters, Cerro Azul, vicinity of Morelia, State of Michoacán, September 15, 1909 (U. S.); *idem*, alt. 2,050 meters, Loma Santa María, vicinity of Morelia, September 17, 1910 (U. S.); *C. G. Pringle* 4263 *pro parte* (type, Gray; cotypes, Field; U. V.); *J. N. Rose*, in the Sierra Madre, State of Zacatecas, August 17, 1897 (U. S.); *idem* 2957, in the Sierra Madre, west of Bolaños, State of Jalisco, September 15–17, 1897 (U. S.); *idem* 3433, in the Sierra Madre, near Santa Teresa, Territory of Tepic, August 11, 1897 (U. S.).

A form with a geographic range extending northwestward from that of the species proper. Plants from Michoacán show so many foliage intergradations with the species (var. *typicus*) that the rank of forma appears best suited to the plants with simple leaves.

Cosmos scabiosoides var. *oblongus*, var. nov.—A var. *typica* foliorum segmentis plerumque lanceolato- vel ovato-oblongis differt.

¹Var. nov.

Type specimen: Collected by Brother G. Arsène, No. 5794, at altitude of 2,800 meters, Quinceo (vicinity of Morelia), State of Michoacán, Mexico, 1910 (U. S.).

Distribution: Known only from type locality in State of Michoacán, Mexico.

Specimens examined: *Brother G. Arsène 5603 pro parte*, alt. 2,500 meters, Dos Teteras (vicinity of Morelia), State of Michoacán, October 26, 1911 (Mo., cum var. *typica commixta*; U. S.); *idem 5794* (type, U. S.; cotype, Mo.).

Has a foliar appearance simulating more or less that of *C. Nelsonii*.

21. *Cosmos purpureus* (DC.) Benth. & Hook. f. ex Hemsl. Biol. Centr. Amer. Bot. 2: 200. 1881; *Bidens purpurea* DC. Prodr. 5: 604. 1836; *B. purpurea* var. *glabriuscula* DC. loc. cit.; *Coreopsis purpurea* Moc. & Sess. ex DC. loc. cit.; *Cosmos Uhdeanus* Kunth & Bouché ex Kunth, Ind. Sem. Hort. Berol. 12. 1846 (ex descript.); Walp. Repert. 6: 721. 1847.

Herba perennis, adscendens vel erecta, e radicibus fasciculatis ac tuberoso-incrassatis, 0.9-2.5 m. alta, caule subtetragono, sulcato, purpurascenti, piloso-hirto, subsimplici, ramis glabratiss. Folia petiolata petiolis vix marginatis 0.5-1.5 cm. longis, petiolo adjecto 5-9 cm. longa et 4-8 cm. lata, circumambitu deltoidea, bipinnatifida principalium foliolis 2- vel 3-jugis, membranacea, segmentis saepius ovato-oblongis, apice abrupte acutis et callosomucronatis, plerisque 1-2 cm. longis et 5-14 mm. latis, integris vel plus minusve lobatis, supra viridibus et obscure puberulis subtus nervisque hirto-pilosiusculis et saepius rubescentibus, minutissime glanduloso-rugosis, margine scabriusculo-ciliatis, basi cuneato-decurrentibus. Capitula saepius 5-9, tenuiter pedunculata pedunculis usque ad 2 dm. longis, pansa ad anthesin 3.8-4.3 cm. lata et circ. 1.1-1.5 cm. alta. Involucri campanulati bractee exteriores circ. 8, lineares, sursum sensim attenuatae, apice angustae sed non acres, glabrae, 3-5-viridi-nervatae, 6-8 mm. longae et 1-1.3 mm. latae; interiores oblongo-lanceolatae, crebre striatae, margine tenues et plerumque pallidiores quam exteriores manifeste longiores. Flores ligulati circ. 8, ligula obovati, purpurei vel atro-purpurei, apice integri, 1.5-2 cm. longi et 7-9 mm. lati; tubulosi valde atropurpurei, antheris linearibus atro-brunneis. Achaenia graciliter fusiformia, glabra, griseo-brunnea, rotundotetragona, unaquaque facierum profunde 1-sulcata, corpore circ. 12-13 mm. longa et circ. 1.3-1.5 mm. lata, paleas diaphanas apicem versus purpurascentes vix aequantia, plerumque vix rostrata, aristis 2, saepe purpurascentibus, tenuibus, retrorsum hamosis, 2-3 mm. longis, demum saepe caducis.

Type specimen: Collected by J. L. Berlandier, No. 1007, on the western slopes of the Cordillera de Guchilaque (C. de Guichilaca, near Cuernavaca, State of Morelos), Mexico, October, 1827 (Del.).

Distribution: From the states of Morelos and Mexico, eastward to the State of Vera Cruz, southeastern Mexico.

Specimens examined: *Adole*, State of Vera Cruz, October, 1910 (Field); *J. L. Berlandier 985*, Cordillera de Guchilaque (near Cuernavaca, State of Morelos; Del.); *idem 1007* (type and two cotypes, Del.); *idem 1021 pro parte*, Cordillera de Guchilaque, October, 1827 (Del., ex num. cotype of *Bidens purpurea* var. *glabriuscula* DC.); *idem 1163*, Toluca (Toluca), State of Mexico (Del.); *ex Hort. Berol.*, October, 1857 (Par.; sub nom. *C. atropurpureo* Kunth); *C. G. Pringle 8238*, alt. 6,500 feet, growing 3–8 feet tall from tuberous-thickened, fascicled roots, mountains above Cuernavaca, State of Morelos, September 30, 1899 (Calif.; Field; Gray; N. Y.; Phila.; U. S., etc.).

The original materials of *Cosmos Uhdeanus* Kunth & Bouché have not been seen by me,¹ but the description is fairly satisfactory and leaves no doubt as to which of the species of *Cosmos* was intended. Robinson (Proc. Amer. Acad. 44: 623. 1909) has properly associated with this name *Pringle 8238*, a handsome plant liberally represented in the larger herbaria, and matched, further, by a beautiful specimen collected more recently by *Adole* in Vera Cruz.

Bidens purpurea DC. and its var. *glabriuscula* DC. were founded respectively upon *Berlandier 1007* and *Berlandier 1021 pro parte*. These numbers, also *Berlandier 985* and *1163*, are especially well represented in the valuable herbarium left by M. E. Moricand (Del.). Excluding one sheet of *No. 1021*, which is typical *Cosmos scabiosoides* HBK., the rest show various intergradations from small leaves 2–3 cm. long, pinnatisect as described by DeCandolle, to larger leaves 6–8.5 cm. long, definitely bipinnate and matching those of the *Pringle* and the *Adole* plants. Thus *C. Uhdeanus* Kunth & Bouché, typified as it appears to be by *Pringle 8238* and by the *Adole* plant, is found synonymous with and referable to *C. purpureus* (DC.) B. & H.²

22. *Cosmos Nelsonii* Robins. & Fern. Proc. Amer. Acad. 44: 622. 1909.

Herba perennis, e radicibus tuberosis erecta, 6–8 dm. alta; caule parce subtetragono, subsimplici, glabro, sulcato, sicco stramineo vel purpurascenti. Folia petiolata petiolis alatis 0.5–2 cm. longis, petiolo adjecto 5–8 cm. longa et 4–9 cm. lata, circumambitu deltoidea, bi- vel tripinnatifida, principalium foliolis 2 vel 3 jugis, membranacea, segmentis lanceolatis, apice subacutis sed saepius non

¹It is quite probable, however, that the Hortus Berolinensis specimen just cited had been gathered from the same materials or their direct descendants. It was formerly in Schultz Bipontinus' private herbarium and its determination "*Cosmos atropurpureus* Kunth" is doubtless significant.

²*Bidens purpurea* var. *glabriuscula* DC. was merely a subglabrous variant as was pointed out by me in a former paper (Bot. Gaz. 80: 382. 1925), and does not appear to merit segregation, even as a forma.

calloso-mucronatis, plerisque 1-2 cm. longis et 3-8 mm. latis, integris vel 2-3-lobatis, supra olivaceis et vix puberulis, subtu paulo pallidioribus et saepe rubescentibus ac minutissime glanduloso-rugosis, margine scabriusculo-ciliatis, basi cuneato-decurrentibus, rhachi glabro gracili vix alato. Capitula circ. 3 vel 4, tenuiter pedunculata pedunculis usque ad circ. 12 cm. longis, pansa ad anthesin 4-5 cm. lata et circ. 1.1-1.4 cm. alta. Involucri campanulati bracteae exteriores circ. 8, lineari-oblongae, glabrae, acutatae, perspicue 5-7-atronervatae, plerumque 7-9 mm. longae et 1.4-1.8 mm. latae; interiores anguste ovato-oblongae, crebre striatae margine tenues, quam exteriores saepius paulo longiores. Flores ligulati 8-10, ligula elliptici vel oblongi, apice integri vel subdenticulati, rosacei vel pallide purpurei, 2-2.5 cm. longi et circ. 1 cm. lati; tubulosi flavi; antheris linearibus brunneo-violaceis. Achaenia submatura graciliter fusiformia, glabra, brunnea, rotundo-tetragona, unaquaque facierum profunde 1-sulcata, corpore circ. 11 mm. longa et circ. 1.8 mm. lata, erostrata, aristis saepissime 4, stramineis, tenuibus, retrorsum barbatis, quarum duae circ. 5 mm. longae aliae multo breviores.

Type specimen: Collected by E. W. Nelson, *No. 1176 pro parte*, at altitude of 2,900-3,300 meters, in vicinity of Cerro San Felipe, State of Oaxaca, Mexico, September 1, 1894 (Gray).

Distribution: Known only from the State of Oaxaca, Mexico.

Specimens examined: *E. W. Nelson 1176 pro parte* (type, Gray); *idem 1363*, alt. 7,000-9,500 feet, 18 miles southwest of City of Oaxaca, September 10-20, 1894 (Field; U. S.); *idem 1363a*, eodem loco et tempore (Gray; U. S.); *idem 1449*, alt. 5,550-7,500 feet, valley of Oaxaca, September 20, 1894 (Gray; U. S.).

23. *Cosmos peucedanifolius* Wedd. Chlor. And. 1: 70. 1855; *Bidens peucedanifolia* O. Ktze. and vars. *bipinnatisecta* O. Ktze. and *soralensis* O. Ktze. Rev. Gen. 3²: 137. 1898.

Folia saepius bipinnatisecta.

Foliorum segmenta (saepe anguste) linearia vel lineari-spathulata.....*C. peucedanifolius* sensu stricto.

Foliorum segmenta plerumque lanceolata vel ovata.

var. *tiraquensis*.

Folia integra vel parce pinnata.....var. *cochabambensis*.

Herba perennis, e radicibus tuberiformibus, erecta vel adscendens, simplex vel ramosa 1.5-5 dm. alta, caule ramisque sulcatis et teretibus vel interdum parce angulatis, glabris vel pilis sparsissimis instructis. Folia tenuiter petiolata petiolis planis vix marginatis 1.5-5 cm. longis, petiolo adjecto 5-14 cm. longa, saepius bipinnatisecta, segmentis primariis 2-3-jugis oppositis, ultimis (saepe anguste) linearibus vel linearis-spathulatis, membranaceis, glabris pubescentibusve, integris, subrevolutis, apice acutis, plerumque 2-5 mm. latis, terminali longiore. Capitula solitaria, pedunculata pedunculis tenuibus glaberri-

mis 1-3 dm. longis, pansa ad anthesin 4.5-7.5 cm. lata et 1.2-2 cm. alta. Involucri campanulati bracteeae exteriores plerumque 7 vel 8, lanceolatae vel obovato-oblongae, glabrae, circ. 8-14-atro-striatae, supra acuminatae acumine angusto obtusiusculo, 8-15 mm. longae; interiores ovatae vel ovato-lanceolatae, quam exteriores nunc paulo breviores nunc paulo longiores. Flores ligulati plerumque 8, intense rosacei vel purpurascens, ligula anguste vel sublate obovati, apice obtuso subdentati, 2-3.8 cm. longi et 1-1.9 cm. lati; tubulosi flavidi, antheris nigris, polline sulphureo- (non aurantiaco-) flavo; paleis interdum nematoideis. Achaenia anguste fusiformia, rotundo-tetragona, unaquaque facierum 1-sulcata, brunnea vel brunneo-atra, glabrata, superne rostrata, corpore circ. 1.5-2 cm. longa et circ. 1 mm. crassa, apice 2-3-aristata aristis retrorsum hamosis 0.5-1.5 mm. longis.

Type specimen: Collected by H. A. Weddell, No. 3737, in high, grassy places of Mt. Curi, Province of Tomina, Department of Chuquisaca, Bolivia, December, 1845-January, 1846 (Par.).

Distribution: In the Andes from southern Bolivia northwestward into Peru.

Specimens examined: *M. Bang* 1302, vicinity of Sorata, Bolivia, May, 1892 (Gray; Mo.; N. Y.; Phila.; U. S.; U. V.; type collection of *Bidens peucedanifolia* var. *soratensis* O. Ktze.); *O. Buchtien* 611, alt. 3,200 meters, mountain slopes, Unduavi, northern Yungas, Bolivia, February, 1915 (Field; U. S.); *Cárdenas* 7 special, Cochabamba, Bolivia, 1922 (U. S.); *K. Fiebrig* 2966, alt. 3,300 meters, Patanca, southern Bolivia, February 1, 1904 (Gray); *O. Kuntze*, alt. 3,000 meters, Río Juntas, Bolivia, April, 1892 (N. Y.; cited by Kuntze for his *Bidens peucedanifolia* var. *bipinnatisecta*); *idem*, alt. 3,400 meters, Tunari, Bolivia, May 4, 1892 (Mo.; N. Y.; Kuntze's first cited specimen of his var. *bipinnatisecta*); *H. H. Rusby* 1682 *pro parte*, alt. 10,000 feet, Sorata, Bolivia, February, 1886 (Mo.; N. Y.); *C. H. T. Townsend* 1507, Pachicayo, Peru, March 27, 1913 (U. S.); *H. A. Weddell* 3737 (type, Par.).

In the past, several students of South American Compositae have regarded *Cosmos diversifolius* Otto, a species originally described from material which clearly was Mexican, as extending from Mexico into Peru and Bolivia. A comparative examination of many specimens from northwestern South America and from Mexico shows, however, that the former, while differing among themselves considerably, are fairly well marked and can usually be distinguished from *C. diversifolius* without much difficulty.

Weddell (loc. cit.) was the first to segregate the South American material. He described three species, *C. integrifolius*, *C. peucedanifolius*, and *C. subpubescens*. The first and last of these are treated in the immediately following pages (pp. 441 and 442). His *C. peucedanifolius*, from Bolivia, may best be recognized by the narrowly

linear leaf segments: "foliis profunde pinnatisectis, lobis utrinque 2 anguste linearibus elongatis integris, terminali caeteris fere duplo longiore. . . ." (Wedd. loc. cit.). Otto Kuntze's vars. *bipinnatisectus* and *soratisensis* are represented by good specimens still extant (Berl.; N. Y., etc.) and are seen to belong here, differing only in the here unimportant matter of the degree of leaf dissection.

Cosmos peucedanifolius var. **cochabambensis** (O. Ktze.) Sherff, Bot. Gaz. 88: 307. 1929; *Bidens peucedanifolia* var. *cochabambensis* O. Ktze. Rev. Gen. 3²: 137. 1898; *Cosmos integrifolius* Wedd. Chlor. And. 1: 70. 1855.

A specie foliis integris vel parce pinnatis, laminis segmentisve lineari-lanceolatis vel saepe anguste oblanceolatis differt.

Type specimen: Collected by Miguel Bang, No. 1021, vicinity of Cochabamba, Bolivia, 1891 (N. Y.).

Distribution: Andes region, Bolivia.

Specimens examined: *M. Bang 1021* (type, N. Y.; cotypes, Gray; Mo.; Phila.; U. S.); *H. A. Weddell 3663*, Province of Acero, Department of Chuquisaca, Bolivia, November and December, 1845 (Par., type of *Cosmos integrifolius* Wedd.).

C. integrifolius apparently was segregated from *C. peucedanifolius* mainly because of the leaf characters: "foliis lineari-lanceolatis, decimetralibus, integerrimis rariusve lobo lineari ad unum alterumve latus vel utrinque instructis. . . ." (Wedd. loc. cit.). The type collection of Kuntze's var. *cochabambensis* (*Bang 1021*) shows a slight tendency toward greater division of the leaves than described by Weddell (but not as found on his type specimens) yet otherwise agrees with his description of *C. integrifolius*. Kuntze's interpretation of this form, as representing a variety, is apparently nearer the truth than was Weddell's.¹

Cosmos peucedanifolius var. **tiraquensis** (O. Ktze.) Sherff, Bot. Gaz. 88: 307. 1929; *C. subpubescens* Wedd. Chlor. And. 1: 70. 1855; *C. pulcherrimus* Schz. Bip. Bull. Soc. Bot. Fr. 12: 79. 1865 (nomen subnudum); *Bidens pulcherrima* Schz. Bip. Linnaea 36: 528. 1865-66 (nomen subnudum); *Cosmos marginatus* Klatt, Abhandl.

¹ Weddell's type sheet of *C. integrifolius* has two specimens, one about 5 dm. and the other about 8 dm. Both are simple below and only slightly branched above. The larger plant's longest peduncle is about 4 dm. long, with a small, oblong-lanceolate leaf (bract) 2 cm. long and 5.5 mm. wide, attached 4 cm. below the head. Both plants have most of the leaves elongate-linear or very narrowly lanceolate, 10-15 cm. long, the blades gradually narrowed below into a winged petiole. Several blades, however, are irregularly 2-3-furcate or incised with 1-3 elongate teeth or lobes, these reaching even 5 cm. in length and decurrent below into a widely alate petiole.

Naturf. Ges. Halle 15: 328. 1882; *Bidens peucedanifolia* var. *tiraquensis* O. Ktze. Rev. Gen. 3¹: 137. 1898.

A specie foliorum segmentis principalibus plerumque lanceolatis vel ovatis differt.

Type specimen: Collected by Otto Kuntze, at altitude of 4,000 meters, Tiraqui, Bolivia, April 1–4, 1892 (N. Y.).

Distribution: Southern Bolivia northwestward to central Peru.

Specimens examined: Mrs. A. F. Bandelier 18, alt. 12,500 feet, Is. Titicaca, Lake Titicaca, Bolivia, 1905 (N. Y.; nomen incolarum aymaranarum, Panti-Panti); O. Buchtien 3074, alt. 3,840 meters, Isla del Sol, Lake Titicaca, Bolivia, March, 1910 (Field; N. Y.; U. S.); K. Fiebrig 2822, alt. 3,000 meters, Pinos near Tarija, southern Bolivia, January 22, 1904 (Del.; Field; Mo.); Cl. Gay, Department of Cuzco, Peru, October, 1839–February, 1840 (Par.; type of *Cosmos subpubescens* Wedd.); F. L. Herrera, alt. 3,000–3,600 meters, Cuzco, Peru, July, 1923 (U. S.); idem 1025, alt. 3,700 meters, Hacienda Churu, Province of Paucartambo, Department of Cuzco, Peru, January (e pittacio lectoris ipsius), 1926 (Field; Gray, 2 sheets; Mo.; N. Y.; U. S.; nom. vulgare, Panti); O. Kuntze, alt. 4,000 meters, Tiraqui, Bolivia, April 1–4, 1892 (type, N. Y.); G. Mandon 54, alt. 2,650–3,000 meters, in uncultivated places, thickets, etc., vicinity of Sorata, along road to Lucatia, Bolivia, February–March, 1858 (Del., 3 sheets; N. Y.); idem (similiter) 54, alt. 2,800–3,000 meters, in thickets everywhere, vicinity of Sorata, January–March, 1859 (Del.; Gray; N. Y.); A. Mathews, Province of Chachapoyas, northern Peru (Gray, 2 sheets; type material of *C. marginatus* Klatt); H. H. Rusby 1682 pro parte, alt. 10,000 feet, Sorata, Bolivia, February, 1886 (Gray; N. Y., cum specie ipsa; Phila.; U. S.); A. Weberbauer 6381, Peru, 1909–1914 (Field); idem 7597, alt. 3,600 meters, on grass steppe with scattering shrubs, Yanahuajra Valley, Province of Huanta, Department of Ayacucho, Peru, March 18, 1926 (Field).

Weddell's *C. subpubescens* was based on a plant by Gay from the Province of Cuzco, Peru. A careful reading of his description shows that here again the leaves were the chief basis of distinction: "foliis pinnatisectis, lobis utrinque 2–3 lanceolatis integris vel pauci-dentatis mucronatis. . . ." There have come from Cuzco and the adjacent region many specimens which match Weddell's description fairly well, also his type at Paris. One collection was that by A. Mathews from the Province of Chachapoyas, Peru. This was the basis of *Cosmos marginatus* Klatt. Two others, by G. Mandon and both under his No. 54, were from the vicinity of Sorata, Bolivia, and were the basis of the names (sine descript.) *Cosmos pulcherrimus* Schz. Bip. and *Bidens pulcherrima* Schz. Bip. Another was by Otto Kuntze from Tiraqui, Bolivia. This was the basis of *Bidens peucedanifolia* var. *tiraquensis*. It is through this form, which can not be regarded as of higher than varietal rank, that *C. peucedanifolius*

makes its nearest approach to low and rather dwarf forms of *C. diversifolius* Otto.

24. *Cosmos diversifolius* Otto in Knowles & Westcott, Flor. Cab. 2: 3. pl. 47. 1838; *C. reptans* Benth. Pl. Hartweg. 40. 1839; *Dahlia repens* Hartweg ex Benth. loc. cit.; *Cosmea diversifolia* Hort. ex Heynhold, Nomencl. 222. 1840; *Bidens diversifolia* Schz. Bip. in Seem. Bot. Voy. Herald 308. 1852-57 (cf. Ortgies in Regel, Gartenfl. 408. 1861); *B. reptans* Schz. Bip. loc. cit.; *B. dahlioides* Wats. Proc. Amer. Acad. 26: 142. 1891 (cf. Sherff, Bot. Gaz. 56: 494. 1913).

Caules inferne foliolati; capitulis ad anthesin 4-7 cm. latis; radiis vel rosaceis vel violaceis vel lilacinis; achaeniorum corpore plerumque 1-2 cm. longo..... *C. diversifolius* sensu stricto.

Caules scaposi; capitulis ad anthesin circ. 4 cm. latis; radiis subalbidis et parce violaceis; achaeniorum corpore 6-10 mm. longo.
var. *pumilus*.

Herba erecta vel adscendens, e radicibus fasciculatis tuberosisque, 3-9 dm. alta, caule simplici vel ramoso, subtereti, saepius glabro rarius piloso. Folia alato-petiolata petiolis 2-9 cm. longis, petiolo adjecto 4-15 cm. longa, membranacea vel raro crassiuscula; nunc simplicia spathulataque, lamina 1.5-2 (-3.5) cm. lata, inferne in petiolum sensim angustata; nunc pinnatisecta segmentis cuneato-lanceolatis vel plus minusve ovatis, faciebus glabratiss, margine ciliatis, apice acuto vel obtuso saepe mucronatis, 0.5-1.5 (-2.5) cm. latis. Capitula solitaria, longe perspicueque pedunculata pedunculis 2-3 vel etiam -4 dm. longis, pansa ad anthesin 4-7 cm. lata et circ. 1-1.6 cm. alta. Involucri glabri bracteae exteriores circ. 8, late oblongo-lanceolatae vel oblanceolatae, perspicue atro-striatae, apice saepe nitidae et induratae, 8-12 mm. longae; interiores latiores, parce longiores. Flores ligulati 8 (-10) vel rosacei vel violacei vel lilacini, ligula oblanceolata vel etiam obovati, apice integerrimi vel obscure denticulati, 2-3.5 cm. longi et 0.9-1.6 cm. lati; tubulosi lutei. Achaenia fusiformia, obcompressa-tetragona, plus minusve sulcata, atrobrunnea vel badia, glabra vel tuberculato-scabrida, superne sensim angustata vel etiam rostrata, corpore (0.7-) 1-2 cm. longa et circ. 1.1-1.9 mm. crassa, irregulariter 2-4 (-6) -aristata aristis tenuibus, retrorsum hamosis, usque ad 3.5 mm. longis.

Type specimen: Cultivated in the Berlin Botanical Garden in 1835, doubtless from Mexican material, and sent by Friedrich Otto to the Birmingham Botanical Garden, Birmingham, England. Represented by the type plate (Knowles and Westcott, loc. cit.).

Distribution: In southern Mexico from the states of San Luis Potosí and Michoacán southeastward through the states of Oaxaca and Chiapas.

Specimens examined: *Arsène*, ditches, Morelia, State of Michoacán, May, 1909 (Del.); *C. Conzatti* & *V. González* 393, alt. 2,640

meters, summit of Cerro La Carbonera, State of Oaxaca, August, 1897 (Gray); *T. Coulter* 386, Mexico (Gray); *A. Ghiesbreght* 532, flowering from July to end of October, State of Chiapas, 1864-70 (Field; Gray, 3 sheets; Mo.); *T. Hartweg* 310, in pine forests, Anganguero, State of Michoacán, 1837 (Del.; type collection of *Cosmos reptans* Benth.); *ex Hort. Berol.*, 1833 (Mo.) and 1839 (Gray); *E. W. Nelson* 745, alt. 5,500-7,000 feet, vicinity of Totontepec, State of Oaxaca, July 15-20, 1894 (U. S.); *idem* 771, eodem loco et tempore (U. S.); *E. Palmer* 105, Alvarez, State of San Luis Potosí, September 5-10, 1902 (Gray; Mo.; N. Y.; U. S.); *idem* 210 *pro parte*, eodem loco, September 28-October 3, 1902 (Mo., etc.); *idem* 212, eodem loco et tempore (Field; Gray; N. Y.; U. S.); *idem* 213, eodem loco et tempore (Field; Gray; Mo.; N. Y.; U. S.); *idem et C. C. Parry* 481, central Mexico, 1878 (Field; Gray; Mo.; Phila.; U. S.); *idem* 481½ *pro parte*, eodem loco et tempore (Mo., etc.); *C. G. Pringle* 3168, hills, Flor de María, State of Mexico, September 3, 1890 (Field; Gray; type collection of *Bidens dahlioides* Wats.); *idem* 3168a, alt. 8,300 feet, grassy slopes, Flor de María, State of Mexico, September 2, 1892 (Field; Mo.; N. Y.); *idem* 4777, alt. 7,500 feet, Cuesta de San Juan del Estado, State of Oaxaca, August 2, 1894 (Carn.; Del., 2 sheets; Gray; Mo.; Phila.; U. S.; U. V.); *H. E. Seaton* 356, alt. 8,000 feet, Esperanza, Mt. Orizaba, August 15, 1891 (Chi.; Gray; U. S.); *E. & C. Seler* 814, Cerro de Buena Vista, June, 1888 (N. Y.); *L. C. Smith* 539, alt. 7,500 feet, Mt. Telixtlahuaca, State of Oaxaca, July 27, 1895 (Gray).

A species with great diversity of foliage and growth habit. A tendency toward chiefly basal foliage is noticeable but the variation toward chiefly cauline leaves is too frequent to permit of using this character in diagnosis. Herbarium specimens usually show the rays a faded-rose or lilac color; sometimes they are a rather intense purplish-red, but never a black-purple or atrosanguineous color as in the smaller-headed *C. atrosanguineus*. Usually the achenes are 2-aristate, much less often 3-aristate, and very rarely (*Pringle* 4777) even 4-6-aristate.

The garden var. *superbus* (Hort. ex Mill. in Bailey, Stand. Cyclop. Hort. edit. 2. 2: 862. 1914) is unknown to me.

Cosmos diversifolius var. *pumilus* Sherff, Bot. Gaz. 88: 305. 1929.—Herba pumila, 3-4 dm. alta, foliis basalibus, pedunculis scaposis, capitulis ad anthesin tantum circ. 4 cm. latis, radiis sub-albidis et parce violaceis, achaeniis atris erostratis corpore tantum 6-10 mm. longis et 0.7-1 mm. crassis, apice plerumque 2- (raro usque ad 4-) aristatis aristis tantum circ. 1-1.5 mm. longis.

Type specimen: Collected by C. A. Purpus, No. 3029, in meadows, Boca del Monte, State of Puebla, Mexico, September, 1908 (Field).

Distribution: Known only from the type locality in the State of Puebla, Mexico.

Specimens examined: *C. A. Purpus 3029* (type, Field; cotypes, Mo.; N. Y.; U. S.).

25. *Cosmos Schaffneri*, sp. nov.

Herba perennis, gracilis, e radicibus tuberosis fasciculatisque erecta, infra foliosa supra subnuda, caule vix ramoso inferne pubescenti superne subglabrato, circ. 4–6 dm. alto. Folia petiolata petiolis tenuibus rariter subalatis 3–6 cm. longis et maximam partem tantum 0.7–1 mm. latis, petiolo adjecto usque ad 12 cm. longa, bipinnatisecta, rubro-brunnea, foliolis membranaceis, subrevolutis, obsoletissime spinuloso-ciliatis, alibi glabris, eorum lobo terminali vel segmento principali nunc rhomboideo-lanceolato nunc deltoideo-ovato nunc rhomboideo-lanceolato omnino saepius 4–7-dentato dentibus subito sed non perspicue indurato-apiculatis; lateralibus 2 jugis saepe petiolulatis petiolulis tenuibus usque ad 6 mm. longis, inferne 1–2-lobatis lobo lanceolato vel ovato, 2–3 cm. longis, foliolo terminali paulo majore. Capitula tenuissime pedunculata pedunculis usque ad 3 dm. longis, solitaria vel pauca, pansa ad anthesin circ. 3 cm. lata et circ. 1 cm. alta (unicum floescens capitulum visum). Involucri glabri bracteae exteriores 7–9, adpressae, lineares, 5–7-nigro-neratae, apice subacutae, \pm 5 mm. longae, interiores lanceolatae \pm 7 mm. longae. Flores ligulati (verisimiliter circ. 8) roseo-purpurei, ligula oblanceolati (tantum 4 visi), apice acriter circ. 3-denticulati, 1.2–1.6 cm. longi; tubulosi omnino purpurei. Achaenia non visa.

Type specimen: Collected by J. G. Schaffner, No. 229, in the valley of Mexico, southern Mexico (Gray).

Distribution: Known only from type locality in valley of Mexico, southern Mexico.

Specimens examined: *J. G. Schaffner 229* (type, Gray; cotype, Kew, cui commun. Julio, 1878).

Nearest to *C. diversifolius* Otto, from which it differs in its more delicate habit, the differently shaped leaves, the smaller flowering heads with their linear (not lanceolate) exterior involucre bracts, etc.

26. *Cosmos atrosanguineus* (Hook.) Ortg. in Hemsl., Biol. Centr. Amer. Bot. 2: 199. 1881; *C. diversifolius* var. *atrosanguineus* Hook. in Curtis's Bot. Mag. 87: pl. 5227. 1861; *Bidens atrosanguinea* Ortg. in Regel's Gartenflora 10: 406. pl. 347. 1861; *Dahlia zimapani* Roezl ex Ortg. loc. cit.; cf. Vilmorin, Fl. Pl. Terre edit. 2: 269. 1866.

Herba perennis, e radicibus tuberosis fasciculatisque ascendens vel erecta, plerumque tantum ad basim ramosa, 4–6 dm. alta, caule sulcato et saepe hinc inde puberulo. Folia longe petiolata petiolis alato-marginatis plerumque glabris 3–8 dm. longis, petiolo adjecto 7–15 cm. longa, saepe pauca integra ac spathulata vel 1 vel 2 lobis lateralibus instructa, principalia pinnata foliolis rhomboideo-ovatis et basi cuneato-decurrentibus, integerrimis vel remote serratis, membranaceis, supra viridibus subtus pallidioribus, pilis adpressis et non numerosis inconspicue hispidis, margine levibus vel vix spinuloso-

ciliatis, lateralibus 1-3 jugis 2-5 cm. longis, terminali basi saepe irregulariter 1 vel 2 lobis lateraliter instructo. Capitula solitaria longissima pedunculata pedunculis tenuibus usque ad 3.5 dm. longis, pansa ad anthesin circ. 3.7-4.2 cm. lata et circ. 1.4-1.6 cm. alta. Involucri campanulati bractee exteriores circ. 8, adpressae vel demum subreflexae, lanceolatae vel ovato-lanceolatae, apice sub-acuto parce induratae, tergo marginibusque glabrae, 7-15-nerviae, 8-10 mm. longae; interiores lanceolato-ovatae vel (saepe late) ovatae, apice saepius coloratae, 10-13 mm. longae. Flores ligulati circ. 8, ligula anguste obovati, profunde perspicueque atosanguinei, apice subtruncato plus minusve denticulati, 1.5-1.9 cm. longi; tubulosi supra atosanguinei, antheris brunneis, polline perspicue aurantiaco; paleis linearibus, apice acutis atosanguineisque. Achaenia tenuiter fusiformia, infra medium latissima, supra sensim elongato-rostrata, rotundo-tetragona, unaquaque facierum 1- (raro 2-) sulcata, glabra, brunneo-grisea vel nigrescentia, corpore 1.3-2 cm. longa, 1-1.5 mm. crassa, apice 2-3- (fide Ortgiesii etiam 4-) aristata, aristis tenuibus, retrorsum hamosis, saepe rubescentibus, duabus principalibus circ. 4-4.5 mm. longis, aliis multo brevioribus.

Type specimen: Hooker's material was raised from seeds sent a "Mr. Thompson, of Ipswich, from Mexico." Specimens should be at Kew. There is little doubt, however, that Mr. Thompson had received his seeds from the same source as had Ortgies. The latter was head gardener at the Botanical Garden of Zurich and cultivated this same rare (and up to that time unknown) form in Zurich contemporaneously with Hooker's cultures. Ortgies stated that his seed had been collected by Roezl near Zimapán, State of Hidalgo, Mexico.

Distribution: In east-central Mexico from the State of San Luis Potosí southeastward to the State of Hidalgo.

Specimens examined: *Cult. e sem. mexicanis a Thompsonio missis* (Kew); *Hortus Berolinensis*, July 15, 1863 (Par.); *Hortus Cantabrigiensis*, cult. anno 1871 (Gray; N. Y.); *Hort. Vindobonensis*, cult. (e sem. Hort. Turic. anno 1867), August, 1868 (Mus. V.; U. V.); *E. Palmer 210 pro parte*, Alvarez, State of San Luis Potosí, September 28-October 3, 1902 (U. S.); *idem et C. C. Parry 481½ pro parte*, central Mexico, 1878 (Mo.); *E. E. Sherff 5010*, cult. in Hort. Cantabrig., August 12, 1929 (Berl.; Field; Kew).

At Harvard University Botanical Garden (Hort. Cantabrig.) this somewhat bizarre-looking species has been cultivated for more than half a century. The plants there show no tendency to approach in floral or achenial characters *Cosmos diversifolius* Otto, as a variety of which Hooker treated this species. Asa Gray had labeled the original sheet of the Harvard material (Gray) "*C. diversifolius*."¹ Neither Hooker nor Gray seems to have appreciated the diagnostic importance of smaller flowering heads with dark purple or atosan-

¹Formerly I followed Gray's treatment and hence, in several European herbaria, unfortunately reduced specimens of *C. atosanguineus* to *C. diversifolius*.

guineous florets. This diagnostic importance was recognized by Robinson and Fernald, however, when, in 1909, they distinguished (Proc. Amer. Acad. 44: 624) their new *Cosmos Pringlei* "by its larger and much paler rays, yellow disk-flowers . . ." from *C. scabiosoides* HBK.¹

SPECIES EXCLUSAE

Cosmos chrysanthemifolius HBK. Nov. Gen. et Sp. 4: 188 (239). pl. 382. 1820. = *Bidens chrysanthemifolia* (HBK.) Sherff, Bot. Gaz. 61: 501. 1916.

Cosmos chrysanthemoides HBK. ex Schz. Bip. in Seem. Bot. Voy. Herald 308. 1852-57. = *Bidens chrysanthemifolia* (HBK.) Sherff, loc. cit.

Cosmos luteus Curt. Bot. Mag. 41: pl. 1689. 1815. = *Bidens serrulata* (Poir.) Desf. Cat. Hort. Par. edit. 3. 186. 1829.

Cosmos multicaulis D. Don ex Seem. Fl. Vit. 144. 1865-73. = *Glossogyne tenuifolia* (La Bill.) Cass. Dict. Nat. Sc. 51: 475. 1827.

Cosmos pilosus HBK. Nov. Gen. et Sp. 4: 189 (241). 1820. = *Bidens pilosa* var. *calicicola* (Greenm.) Sherff, Bot. Gaz. 80: 377. 1925.

Cosmos pinnatus Jacq. ex Steud. Nom. edit. 2. 1: 426. 1840. = *Coreopsis coronata* fide Steud. loc. cit.²

Cosmos roseus Mart. ex Steud. loc. cit. (nomen nudum).

Cosmos tenellus HBK. Nov. Gen. et Sp. 4: 188 (240). 1820. = *Bidens pilosa* var. *bimucronata* f. *odorata* (Cav.) Sherff, Bot. Gaz 81: 41. 1926.

¹The fact that Palmer 210 and Parry & Palmer 481½ each include both *C. atrosanguineus* and *C. diversifolius* must be explained as a case of intermixed rather than of intergrading specimens.

²From Steudel's omission of the authorship of *Coreopsis coronata*, it must be understood that he had in mind the *C. coronata* Hook. (nec Linn., Bert., Walt., etc.), which alone he retained as valid under *Coreopsis* (loc. cit. 420).

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